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# Service Manual

XV-DVR9H

ORDER NO.
**RRV3019**

## DVD-RW/HDD TUNER

# XV-DVR9H

### THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Model | Type | Power Requirement | Regional restriction codes (Region No.) | Remarks |
|---|---|---|---|---|
| XV-DVR9H | WYXJ | AC220-240V | 2 | |
| XV-DVR9H | WVXJ | AC220-240V | 2 | |

- **When servicing this model, some service procedures may reset the settings that customer set (*) to the factory default settings. Make sure to explain this to the customer.**

**(*) : Initial Setup (Clock Setting, Tuner settings, Video In / Out settings, Audio In settings, Audio Out settings, Language settings, Recording settings, Playback settings)**

**Refer to the chapter 15 of the Operating Instructions for more details.**

**An HDD (Hard Disc Drive) is mounted in this product.**
**The HDD is a precision instrument very vulnerable to shock and electrostatic charges. Please read "7.4 Cautions on Handling the HDD" in this manual and exercise sufficient caution when handling the HDD itself, as well as the product with the HDD built in.**
**When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible. Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.**
**The user must be made aware that all recorded data are deleted if the HDD is intialized.**

For details, refer to "Important Check Points for Good Servicing".

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# SAFETY INFORMATION

## LITHIUM BATTERY NOTICE

**CAUTION**

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

When replacing the lithium batteries, follow the note below. Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

Note : The lithium battery installation position is shown in the exploded views.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER : 70 mW
PULSE WIDTH : 100ns DUTY : 50% 140mW
WAVELENGTH : 654 - 662 nm

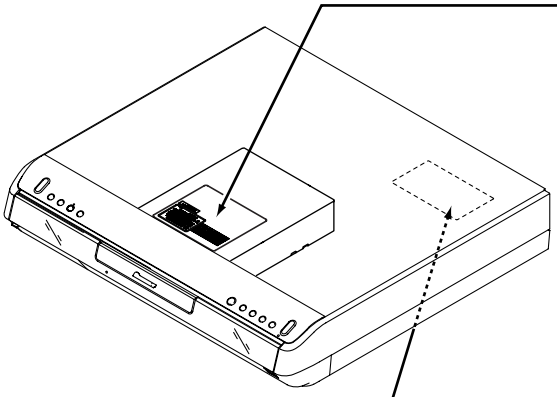
LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER : 100 mW
PULSE WIDTH : 100ns DUTY : 50% 240mW
WAVELENGTH : 780 - 787 nm

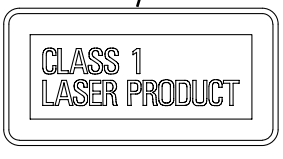
## ■ LABEL CHECK

**WARNING !**

The AEL (accessible emission level) of the laser power output is less than **CLASS 1** but the laser component is capable of emitting radiation exceeding the limit for **CLASS 1**.

A specially instructed person should do servicing operation of the apparatus.



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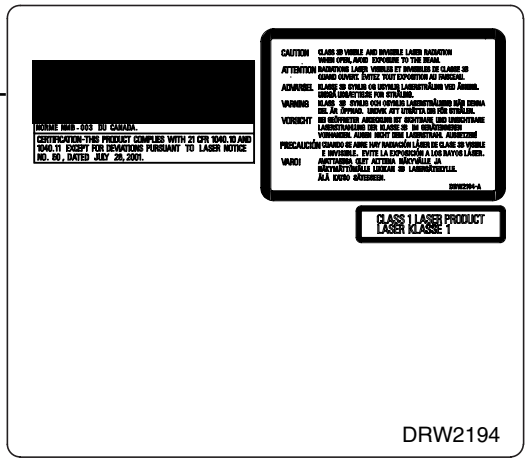


DRW2194

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

## [Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

### 1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

### 2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

### 3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

### 4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

### 5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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# 1. SPECIFICATIONS

## General

System . . . . . HDD, DVD-Video, DVD-R/RW, Video-CD, Super VCD, CD, CD-R/RW (WMA, MP3, JPEG, CD-DA)
Power requirements . . . . . 220-240 V, 50/60 Hz
Power consumption
XV-DVR9H . . . . . 81 W
S-DVR9SW . . . . . 151 W
Power consumption in standby
XV-DVR9H . . . . . 0.80 W (front display off)
S-DVR9SW . . . . . 0 W
Dimensions . . . . . 420 (W) x 77.5 (H) x 398 (D) mm
Weight . . . . . 5.6 kg
Operating temperature . . . . . +5ºC to +35ºC
Operating humidity . . . . . 5% to 85% (no condensation)
TV system . . . . . PAL/SECAM/NTSC (external input only)

**Recording**

Recording format . . . . . DVD Video Recording DVD-VIDEO

**Recordable discs**

DVD-RW (DVD Re-recordable disc)
DVD-R (DVD Recordable disc)

**Video recording format**

Sampling frequency . . . . . 13.5MHz
Compression format . . . . . MPEG

**Audio recording format**

Sampling frequency . . . . . 48kHz
Compression format . . . . . Dolby Digital or Linear PCM (uncompressed)

**Recording time**

**HDD**

Fine (FINE) . . . . . Approx. 17 hours
Standard Play (SP) . . . . . Approx. 34 hours
Long Play (LP) . . . . . Approx. 68 hours
Extended Play (EP) . . . . . Approx. 102 hours
Manual Mode (MN) . . . . . Approx. 17-102 hours

**DVD-R/DVD-RW**

Fine (FINE) . . . . . Approx. 1 hour
Standard Play (SP) . . . . . Approx. 2 hours
Long Play (LP) . . . . . Approx. 4 hours
Extended Play (EP) . . . . . Approx. 6 hours
Manual Mode (MN) . . . . . Approx. 1-6 hours

## TV tuner section

Receivable channels

| | PAL B/G | | PAL I | |
|---|---|---|---|---|
| | Frequency | Channel | Frequency | Channel |
| VHF (low) | 47 - 89 MHz | E2 - E4<br>X - Z | 44 - 89 MHz | A - C<br>X - Z |
| VHF (high) | 104 - 300 MHz | E5 - E12<br>S1 - S20<br>M1 - M10<br>U1 - U10 | 104 - 300 MHz | D - J<br>11, 13<br>S1 - S20 |
| Hyper | 302 - 470 MHz | S21 - S41 | 302 - 470 MHz | S21 - S41 |
| UHF | 470 - 862 MHz | E21 - E69 | 470 - 862 MHz | E21 - E69 |

| | SECAM L | | SECAM D/K | |
|---|---|---|---|---|
| | Frequency | Channel | Frequency | Channel |
| VHF (low) | 49 - 65 MHz | 2 - 4 | 49 - 94 MHz | R1 - R5 |
| VHF (high) | 104 - 300 MHz | 5 - 10<br>B - Q | 104 - 300 MHz | R6 - R12<br>S1 - S20 |
| Hyper | 300 - 470 MHz | S21 - S41 | 302 - 470 MHz | S21 - S41 |
| UHF | 470 - 862 MHz | 21 - 69 | 470 - 862 MHz | E21 - E69 |

STEREO
B/G - A2
I - NICAM
L - NICAM
B/G - NICAM
D/K - NICAM

## Amplifier section

Continuous Power Output (RMS):
Front, Center, Surround . . . . . 100 W per channel (1 kHz, 10 % T.H.D., 6Ω)
Subwoofer . . . . . 100 W (100 Hz, 10 % T.H.D., 6Ω)

## FM tuner section

Frequency range . . . . . 87.5 to 108 MHz
Antenna . . . . . 75Ω, unbalanced

## AM tuner section

Frequency range . . . . . 531 kHz to 1,602 kHz
Antenna . . . . . Loop antenna

## Timer

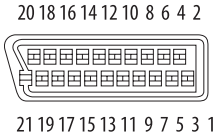
Programs . . . . . 1 month/32 programs
Clock . . . . . Quartz lock (24-hour digital display)
Power off memory . . . . Approx. 5 years (after manufacture)

## Input/Output

VHF/UHF antenna input/output terminal . . . . . VHF/UHF set
75Ω (IEC connector)
Video input . . . . . Line 1 (rear), 2 (front)
Input level . . . . . 1 Vp-p (75Ω)
Jacks . . . . . AV connector (Line 1), RCA jack (Line 2)
Video output . . . . . AV1, AV2
Output level . . . . . 1 Vp-p (75Ω)
Jacks . . . . . AV connector (AV1/AV2)
S-Video input . . . . . Line 1 (rear), 2 (front)
Y (luminance) - Input level . . . . . 1 Vp-p (75Ω)
C (colour) - Input level . . . . . 286 mVp-p (75Ω)
Jacks . . . . . AV connector (Line 1), RCA jack (Line 2)
S-Video output . . . . . AV1
Y (luminance) - Output level . . . . . 1 Vp-p (75Ω)
C (colour) - Output level . . . . . 286 mVp-p (75Ω)
Jacks . . . . . AV connector (AV1)
RGB input . . . . . Line 1
Input level . . . . . 0.7 Vp-p (75Ω)
Jacks . . . . . AV connector (Line 1)
RGB output . . . . . AV1
Output level . . . . . 0.7 Vp-p (75Ω)
Jacks . . . . . AV connector (AV1)
Audio input . . . . . Line 1 (rear), 2 (front),
Analog audio (rear) L/R
Input level
During audio input . . . . . 2V rms
(Input impedance: more than 22 kΩ)
Jacks . . . . . AV connector (Line 1),
RCA jacks (Line 2, Analog audio)
Audio output . . . . . AV1, AV2, Analog audio
During audio output . . . . . 2V rms (AV1, AV2)
1V rms (Analog audio)
(Output impedance: less than 1.5 kΩ)
Jacks . . . . . AV connector (AV1/AV2)
RCA jacks (Analog audio)
Control input . . . . . Mini jack
DV input/output . . . . . 4 pin
(i.LINK/IEEE 1394 standard)

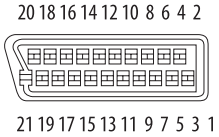
**AV Connectors (21-pin connector assignment)**
This connector sends/receives video and audio signals to/from a compatible colour TV, monitor, VCR, etc.

**AV1(RGB)-TV** connector output for TV/monitor




PIN no.
1 : Audio 2/R out
2 : –
11 : G out
3 : Audio 1/L out
6 : –
15 : R or C out
4 : GND
17 : GND
7 : B out
19 : Video out or Y out
20 : –
8 : Status
21 : GND

**AV2 (LINE 1)** connector input/output for VCR or other component




PIN no.
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15 : R or C in
4 : GND
17 : GND
7 : B in
19 : Video out
20 : Video in or Y in
8 : Status
21 : GND

## Accessories (DVD-RW/HDD Tuner)

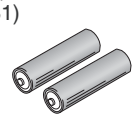
Remote control . . . . . 1
AA/R6 dry cell batteries . . . . . 2
SCART cable . . . . . 1
RF antenna cable . . . . . 1
12-pin system cable (blue) . . . . . 1
16-pin system cable (black) . . . . . 1
AM loop antenna . . . . . 1
FM wire antenna . . . . . 1
Power cord . . . . . 2
Warranty Card . . . . . 1
Setup Guide . . . . . 1

## • Accessories

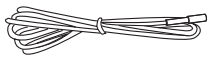
Remote control
(AXD7398: WYXJ type)
(AXD7399: WVXJ type)

AM loop antenna
(ATB7013)

Dry cell batteries
(AA, R6P) x2
(VEM1031)

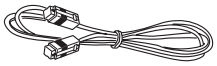


FM Wire antenna
(ADH7030)



RF antenna cable
(VDE1075)

12-pin system cable
(ADE7063) L=3m



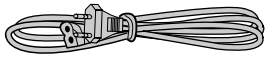
Blue plugs

SCART cable
(VDE1079)

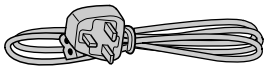
16-pin system cable
(ADE7099)

Black plugs

Power cord
(ADG1154: WYXJ type) x2



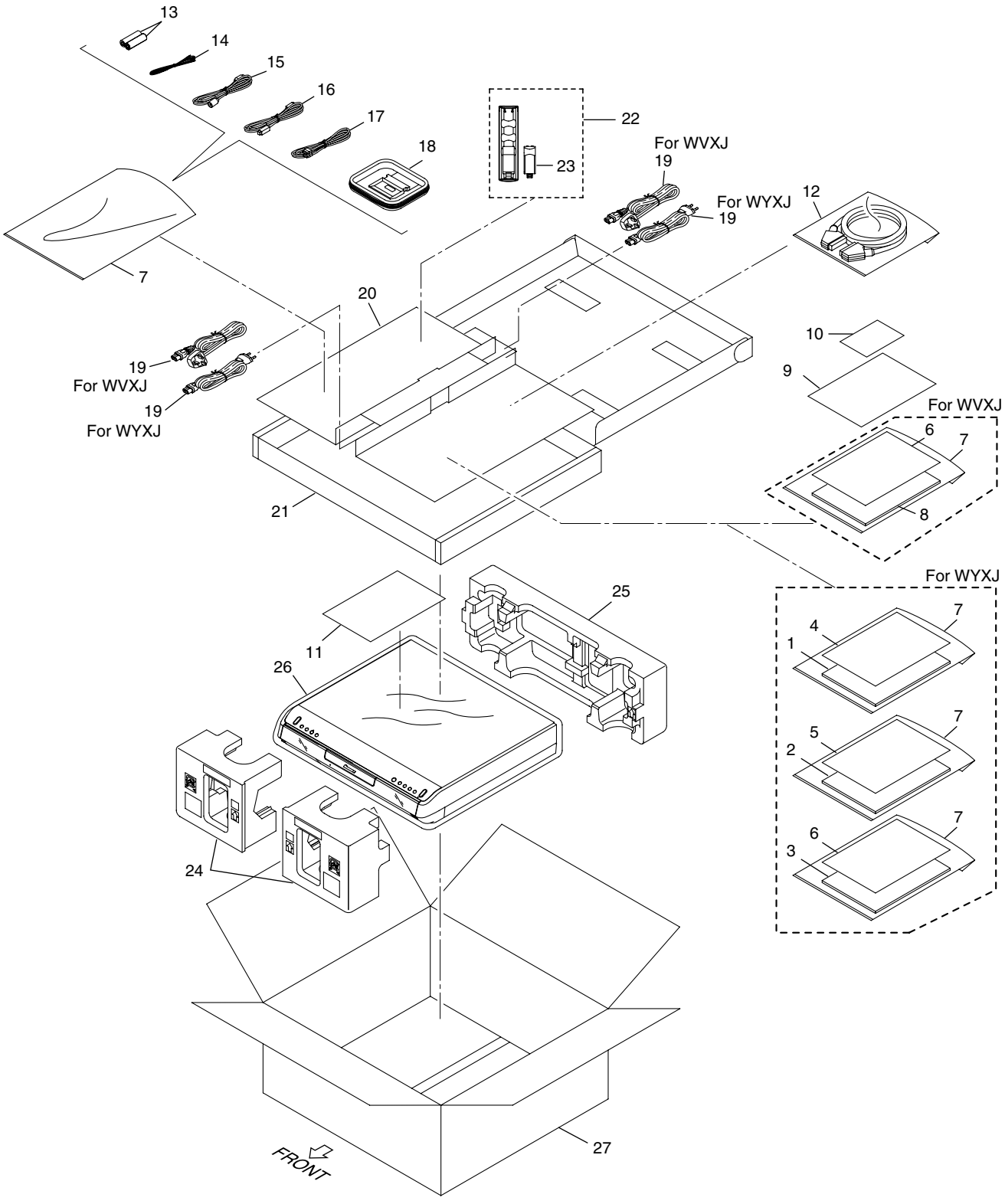
Power cord
(ADG1156: WVXJ type) x2



# 2. EXPLODED VIEWS AND PARTS LIST

*NOTES:*
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

## 2.1 PACKING



## PACKING SECTION Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Operating Instructions (German/French) | See Contrast table(2) |
| | 2 | Operating Instructions (Spanish/Italian) | See Contrast table(2) |
| | 3 | Operating Instructions (English/Dutch) | See Contrast table(2) |
| | 4 | Setup Guide (German/French) | See Contrast table(2) |
| | 5 | Setup Guide (Spanish/Italian) | See Contrast table(2) |
| | 6 | Setup Guide (English/Dutch) | ARE7349 |
| NSP | 7 | Polyethylene Bag | Z21-038 |
| | 8 | Operating Instructions (English) | See Contrast table(2) |
| | 9 | HDD Caution 7L A | ARM7090 |
| NSP | 10 | Warranty Card | ARY7065 |
| | 11 | HDD Caution 7L B | ARM7091 |
| | 12 | SCART Cable | VDE1079 |
| NSP | 13 | Dry Cell Battery (AA,R6P) | VEM1031 |
| | 14 | FM Wire Antenna | ADH7030 |
| | 15 | RF Antenna Cable | VDE1075 |
| | 16 | 12-pin System Cable | ADE7063 |
| | 17 | 16-pin System Cable | ADE7099 |
| | 18 | AM Loop Antenna | ATB7013 |
| ⚠ | 19 | Power Cord | See Contrast table(2) |
| | 20 | Spacer Card | AHB7102 |
| | 21 | Spacer | AHB7096 |
| | 22 | Remote Control | See Contrast table(2) |
| | 23 | Battery Cover | AZA7424 |
| | 24 | Front Pad | AHA7438 |
| | 25 | Rear Pad LR | AHA7439 |
| | 26 | Packing Sheet | AHG7010 |
| | 27 | Packing Case | See Contrast table(2) |

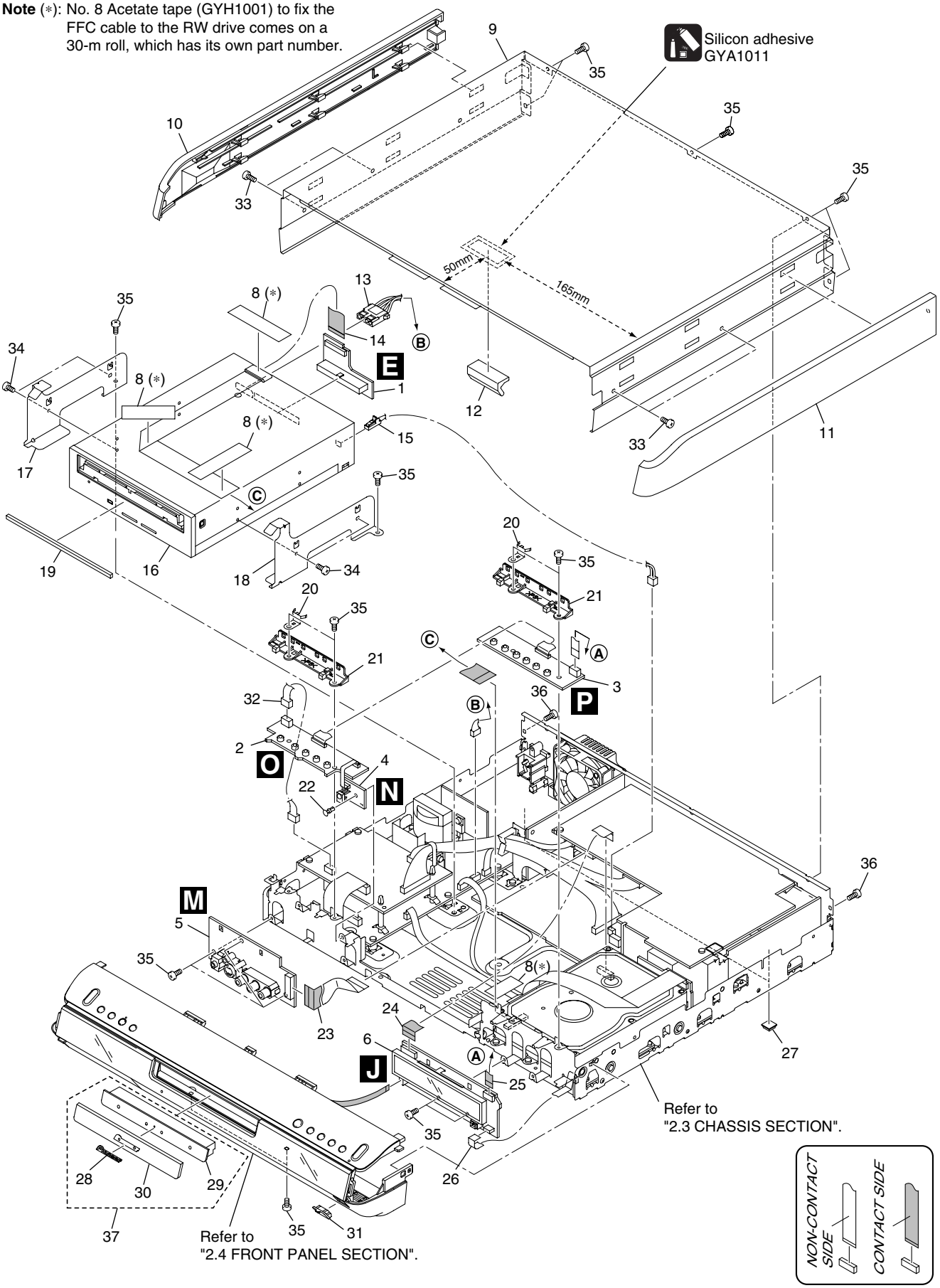
### (2) CONTRAST TABLE

XV-DVR9H/WYXJ and WVXJ are constructed the same except for the following:

| Mark | No. | Description | XV-DVR9H/WYXJ | XV-DVR9H/WVXJ |
|---|---|---|---|---|
| | 1 | Operating Instructions (German/French) | ARC7560 | Not used |
| | 2 | Operating Instructions (Spanish/Italian) | ARC7561 | Not used |
| | 3 | Operating Instructions (English/Dutch) | ARE7348 | Not used |
| | 4 | Setup Guide (German/French) | ARC7564 | Not used |
| | 5 | Setup Guide (Spanish/Italian) | ARC7565 | Not used |
| | 8 | Operating Instructions (English) | Not used | ARB7316 |
| ⚠ | 19 | Power Cord | ADG1154 | ADG1156 |
| | 22 | Remote Control | AXD7398 | AXD7399 |
| | 27 | Packing Case | AHD8335 | AHD8336 |

# 2.2 EXTERIOR SECTION

**Note** (*): No. 8 Acetate tape (GYH1001) to fix the FFC cable to the RW drive comes on a 30-m roll, which has its own part number.



## EXTERIOR SECTION Parts List

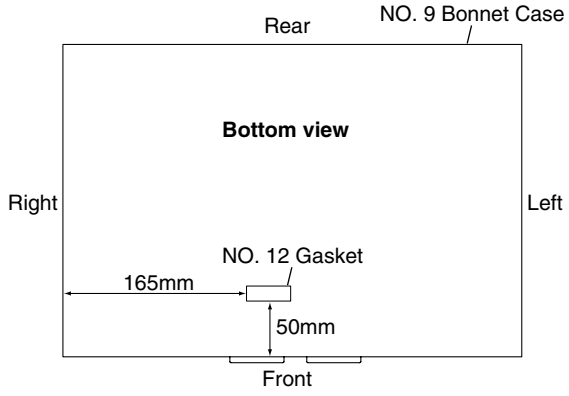
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | ATWB Assy | AWU8240 |
| | 2 | KEY L Assy | AWU8221 |
| | 3 | KEY R Assy | AWU8222 |
| | 4 | IR Assy | AWU8227 |
| | 5 | FRONT JACK Assy | AWU8226 |
| | 6 | DISPLAY Assy | AWU8216 |
| | 7 | Silicone Adhesive | GYA1011 |
| | 8 | Acetate Tape | GYH1001 *(30-m roll) |
| | 9 | Bonnet Case | ANE7322 |
| | 10 | Side Panel L | AAK8208 |
| | 11 | Side Panel R | AAK8209 |
| | 12 | Gasket | AEC7515 |
| | 13 | 4P Lead with Housing | ADX7469 |
| | 14 | 40P FFC/60V | ADD7496 |
| | 15 | Housing Assy (2P) | VKP2315 |
| | 16 | DRIVE Assy R7 (For servise) | VXX2942 |
| | 17 | Mecha Angle L | AND7069 |
| | 18 | Mecha Angle R | AND7070 |
| | 19 | Panel Sheet | AEC7522 |
| | 20 | Earth Spring | ABK7059 |
| | 21 | Joint Mold | AMR7489 |
| | 22 | Rivet | AEC7514 |
| | 23 | 17P FFC/60V | ADD7494 |
| | 24 | 15P FFC/60V | ADD7488 |
| | 25 | 9P FFC/60V | ADD7492 |
| | 26 | 7P FFC/60V | ADD7491 |
| | 27 | Rubber Foot | VEB1325 |
| | 28 | PIONEER Name Plate | AAM7014 |
| | 29 | Tray Cap | AAK8210 |
| | 30 | Tray Panel | AAK8213 |
| | 31 | DV Cap | AAK8215 |
| | 32 | Connector Assy (4P) | PF04PP-S05 |
| | 33 | Screw | BBZ30P040FCC |
| | 34 | Screw | AMZ30P060FTC |
| | 35 | Screw | BBZ30P080FTC |
| | 36 | Screw | PPZ30P080FTC |
| | 37 | Tray Panel Assy | AZA7431 |

**Note :**
When the Bonnet Case is replaced, the Gasket also need to be replaced at the same time.

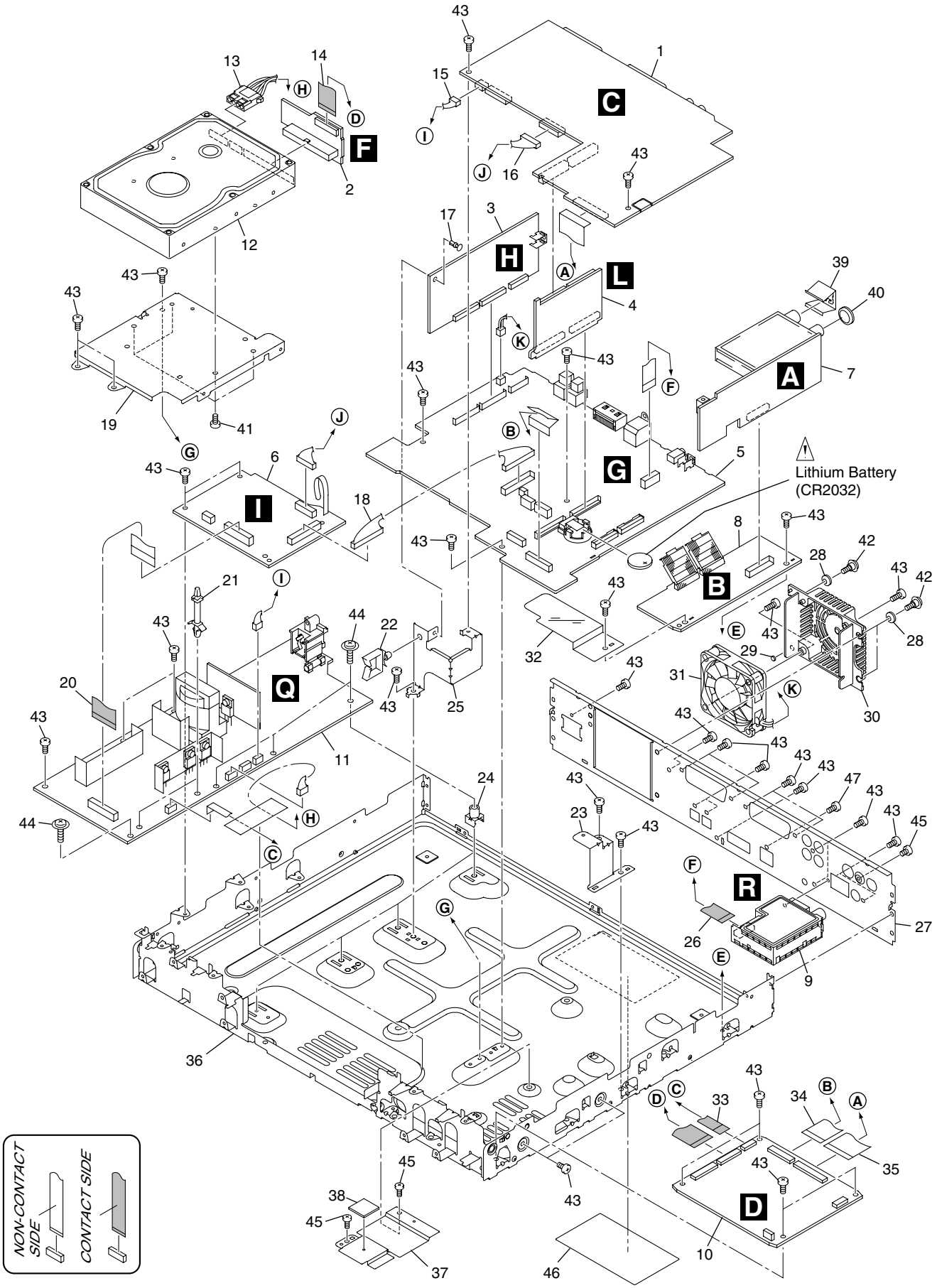
The reason why No.12 Gasket AEC7515 is necessary :
When No.12 Gasket AEC7515 is not assembling to the Bonnet Case, the product does not satisfy the standard value of electric wave interference regulation.
When the Bonnet Case is replaced, confirm that AEC7515 is assembling to the Bonnet Case.

**Note :**
No.8 Acetate Tape using at the production line is ZTA-156A-19.

**• Position of the Gasket**



# 2.3 CHASSIS SECTION



## CHASSIS SECTION Parts List

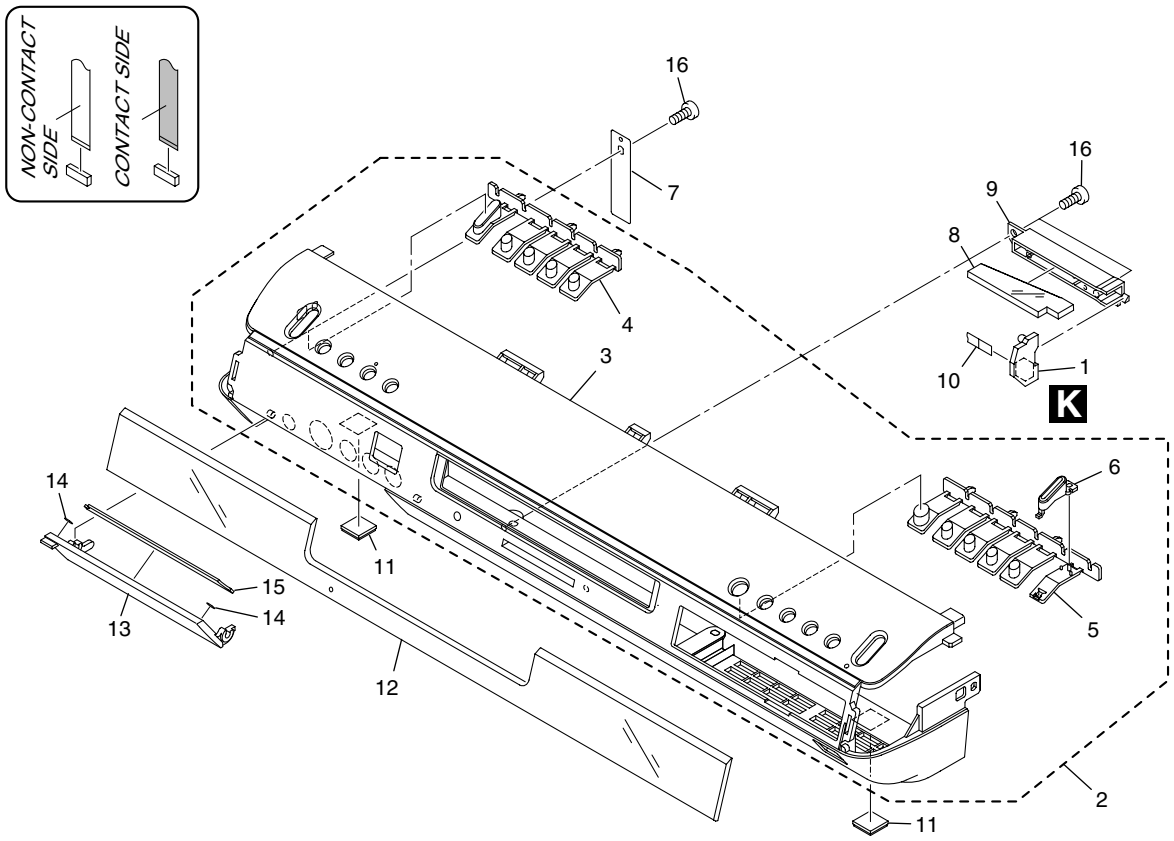
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | JACK Assy | AWU8215 |
| | 2 | ATHB Assy | AWU8241 |
| | 3 | DSP Assy | AWX8486 |
| | 4 | TRADE Assy | AWU8224 |
| | 5 | CONTROL Assy | AWU8202 |
| | 6 | REG Assy | AWU8225 |
| | 7 | TV MODULE Assy | AWU8217 |
| | 8 | TV CONNECT Assy | AWU8203 |
| | 9 | FM/AM TUNER Unit | AXX7170 |
| | 10 | MAIN Assy | VWV2013 |
| ⚠ | 11 | POWER SUPPLY Unit | AWR7013 |
| | 12 | HDD 80G 4R080L0 | VXF1010 |
| | 13 | 4P Lead with Housing | ADX7468 |
| | 14 | 40P FFC/60V | ADD7497 |
| | 15 | 4P Lead with Housing | ADX7467 |
| | 16 | Connector Assy (10P) | PF10PP-S25 |
| | 17 | Rivet | AEC7514 |
| | 18 | Connector Assy (16P) | PF16PP-S25 |
| | 19 | HDD Base | ANG7517 |
| | 20 | 21P FFC/60V | ADD7487 |
| | 21 | PCB Support | AEC7513 |
| | 22 | Wire Saddle | AEC7518 |
| | 23 | Angle PCB B | AND7068 |
| | 24 | PCB Mold | AMR2534 |
| | 25 | Angle PCB A | AND7067 |
| | 26 | 11P FFC/60V | ADD7493 |
| | 27 | Rear Panel | ANC8275 |
| | 28 | Rubber Bushing | VEB1112 |
| | 29 | Door Cushion | VEC2312 |
| | 30 | Fan Cover | AMR7488 |
| | 31 | DC Fan Motor | VXM1109 |
| | 32 | Barrier | AEC7524 |
| | 33 | 8P FFC/60V | ADD7486 |
| | 34 | 24P FFC/60V | ADD7489 |
| | 35 | 32P FFC/60V | ADD7490 |
| NSP | 36 | Bottom Chassis | ANA7175 |
| NSP | 37 | Heat Sink | VNH1070 |
| | 38 | Radiation Sheet | AEB7352 |
| | 39 | Earth Plate | VBK1153 |
| | 40 | Gasket Ring | AEB7363 |
| | 41 | #6-32 Screw | DBA1125 |
| | 42 | Screw B | PBA1014 |
| | 43 | Screw | BBZ30P080FTC |
| | 44 | Screw | IBZ30P150FCC |
| | 45 | Screw | BBZ30P040FCC |
| NSP | 46 | License Label PT | See Contrast table(2) |
| | 47 | Screw | PSC30P080FNI |

### (2) CONTRAST TABLE

XV-DVR9H/WYXJ and WVXJ are constructed the same except for the following:

| Mark | No. | Description | XV-DVR9H/WYXJ | XV-DVR9H/WVXJ |
|---|---|---|---|---|
| NSP | 46 | License Label PT WY | ARW7314 | Not used |
| NSP | 46 | License Label PT WV | Not used | ARW7315 |

# 2.4 FRONT PANEL SECTION



## FRONT PANEL SECTION Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | LED Assy | AWU8223 |
| | 2 | Front Panel Assy | See Contrast table(2) |
| | 3 | Front Panel | See Contrast table(2) |
| | 4 | Button L | AAD7731 |
| | 5 | Button R | AAD7738 |
| | 6 | Button Cap | AAK8246 |
| | 7 | Door Spring | ABH7234 |
| | 8 | Illumination Lens | AAK8214 |
| | 9 | Lens Holder | AMR7487 |
| | 10 | 3P FFC/60V | ADD7495 |
| | 11 | Rubber Foot | VEB1325 |
| | 12 | Window | AAK8211 |
| | 13 | Sealing Door | AAK8278 |
| | 14 | Door Cushion | VEC2312 |
| | 15 | Door Sheet | AAK8216 |
| | 16 | Screw | PPZ30P080FTC |

### (2) CONTRAST TABLE

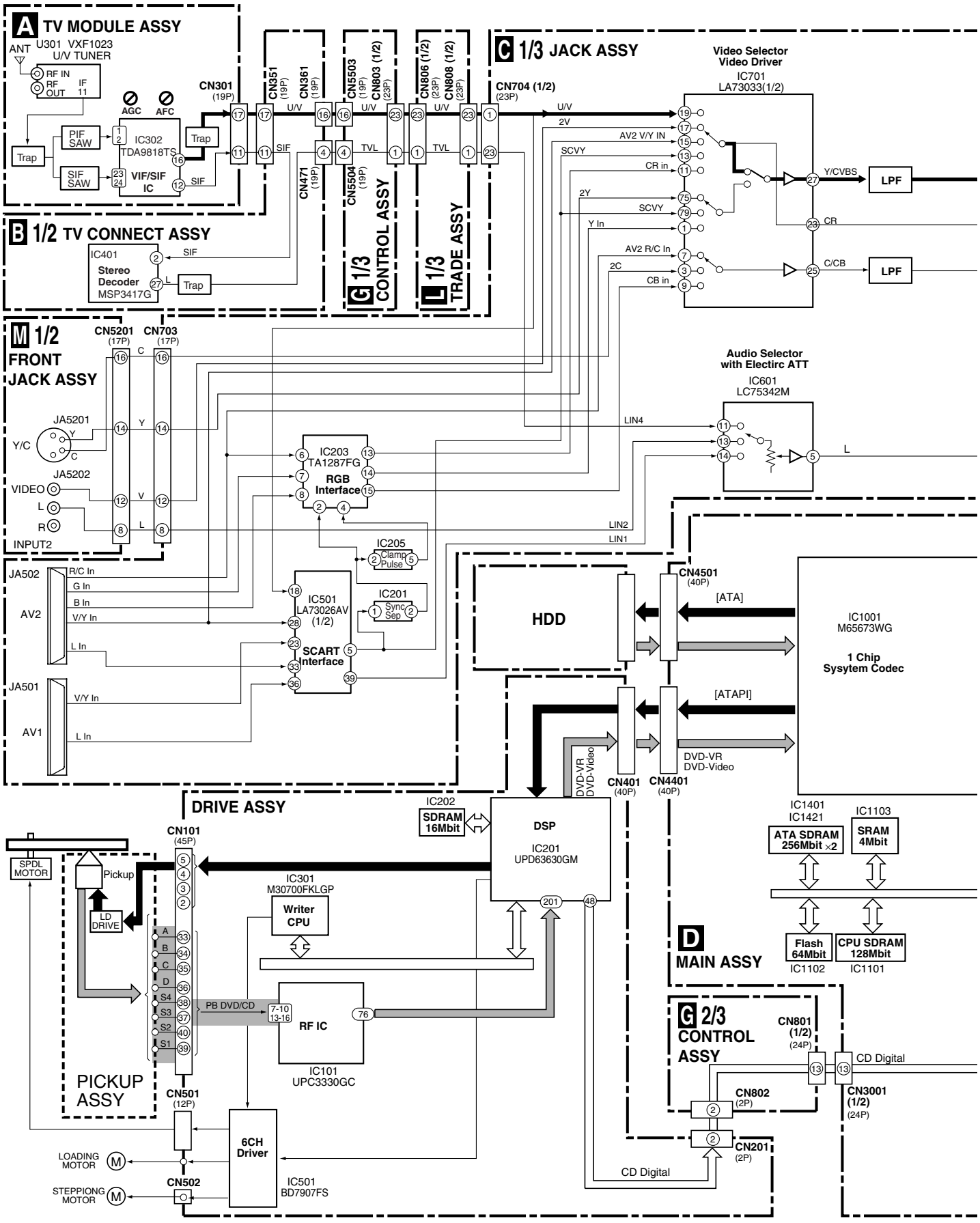
XV-DVR9H/WYXJ and WVXJ are constructed the same except for the following:

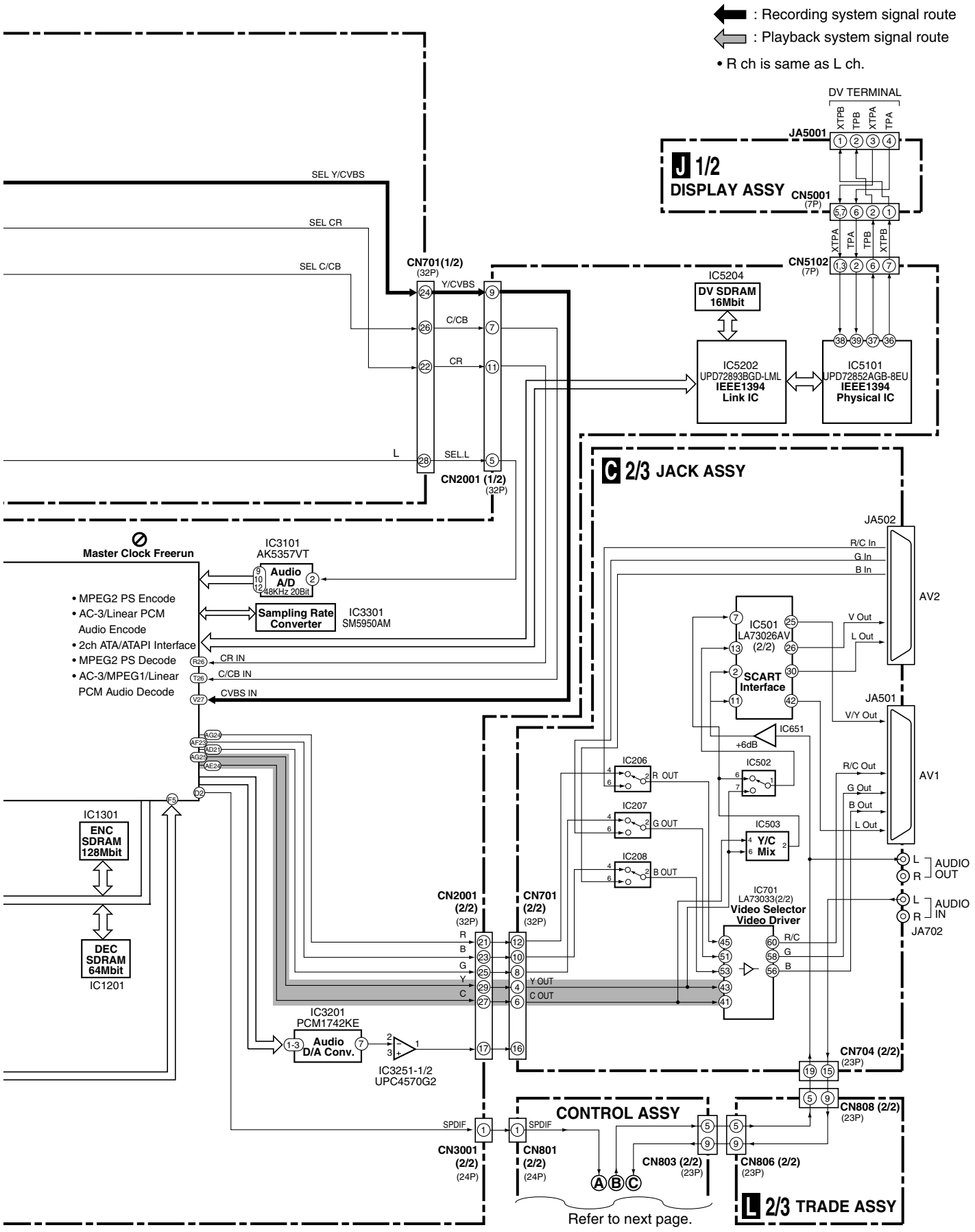
| Mark | No. | Description | XV-DVR9H/WYXJ | XV-DVR9H/WVXJ |
|---|---|---|---|---|
| | 2 | Front Panel Assy | AXG7236 | AXG7242 |
| | 3 | Front Panel | AMB7880 | AMB7891 |

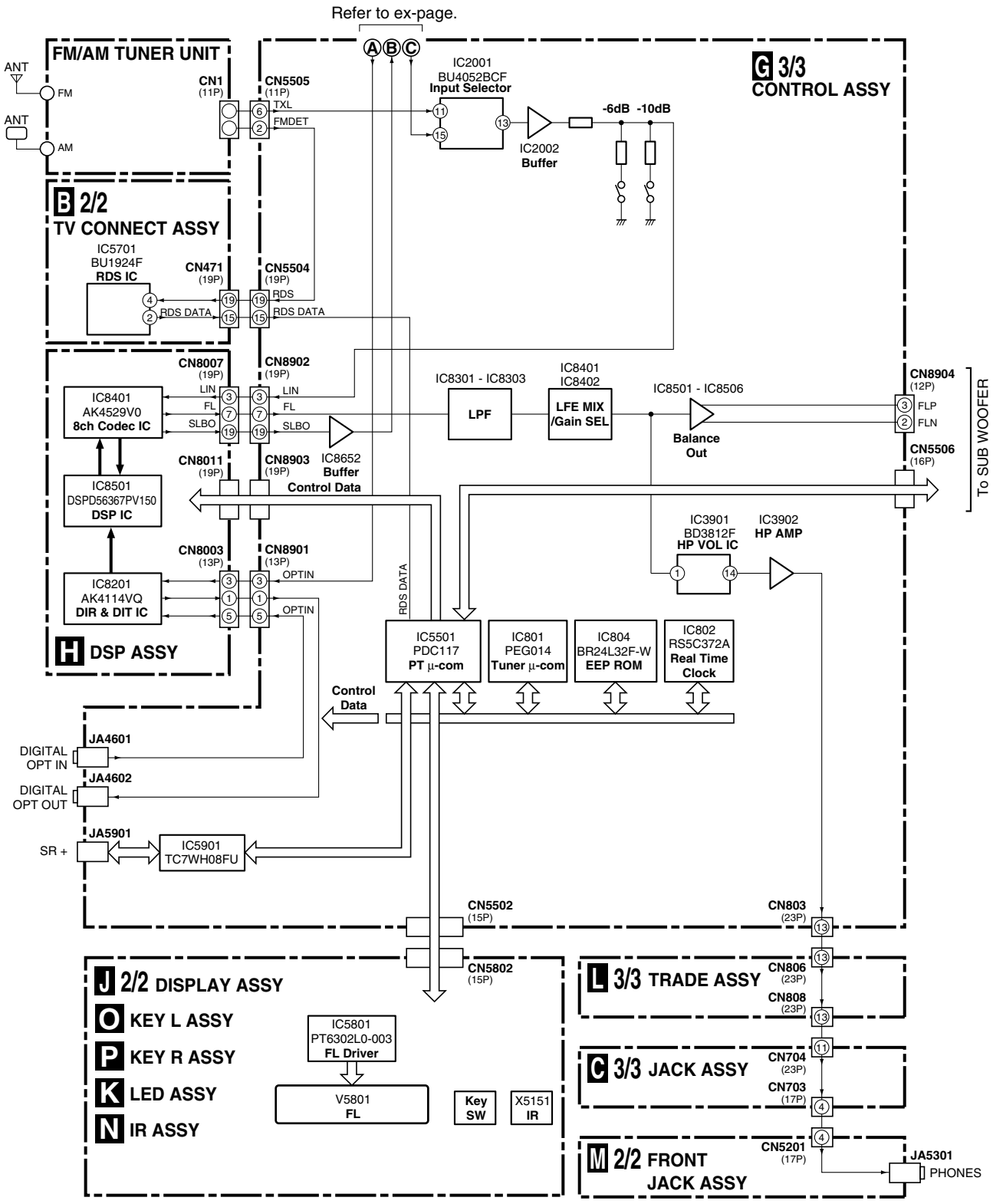
# 3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

## 3.1 BLOCK DIAGRAM

### 3.1.1 OVERALL BLOCK DIAGRAM




: Recording system signal route
: Playback system signal route
• R ch is same as L ch.
DV TERMINAL
XTPB
TPB
XTPA
TPA
JA5001
J 1/2
DISPLAY ASSY
CN5001
(7P)
CN5102
(7P)
SEL Y/CVBS
SEL CR
SEL C/CB
CN701(1/2)
(32P)
Y/CVBS
C/CB
CR
IC5204
DV SDRAM
16Mbit
IC5202
UPD72893BGD-LML
IEEE1394
Link IC
IC5101
UPD72852AGB-8EU
IEEE1394
Physical IC
L
SEL.L
CN2001 (1/2)
(32P)
C 2/3 JACK ASSY
JA502
R/C In
G In
B In
AV2
Master Clock Freerun
IC3101
AK5357VT
Audio
A/D
48KHz 20Bit
Sampling Rate
Converter
IC3301
SM5950AM
• MPEG2 PS Encode
• AC-3/Linear PCM
Audio Encode
• 2ch ATA/ATAPI Interface
• MPEG2 PS Decode
• AC-3/MPEG1/Linear
PCM Audio Decode
CR IN
C/CB IN
CVBS IN
IC501
LA73026AV
(2/2)
SCART
Interface
V Out
L Out
JA501
V/Y Out
IC651
+6dB
IC206
IC207
IC208
R OUT
G OUT
B OUT
IC502
IC503
Y/C
Mix
R/C Out
G Out
B Out
L Out
AV1
L
R
AUDIO
OUT
AUDIO
IN
JA702
IC1301
ENC
SDRAM
128Mbit
DEC
SDRAM
64Mbit
IC1201
CN2001
(2/2)
(32P)
CN701
(2/2)
(32P)
IC701
LA73033(2/2)
Video Selector
Video Driver
R
B
G
Y
C
Y OUT
C OUT
R/C
G
B
IC3201
PCM1742KE
Audio
D/A Conv.
IC3251-1/2
UPC4570G2
CN704 (2/2)
(23P)
CONTROL ASSY
SPDIF
CN3001
(2/2)
(24P)
CN801
(2/2)
(24P)
CN803 (2/2)
(23P)
CN808 (2/2)
(23P)
CN806 (2/2)
(23P)
A B C
L 2/3 TRADE ASSY
Refer to next page.


Refer to ex-page.
FM/AM TUNER UNIT
ANT
FM
ANT
AM
CN1
(11P)
CN5505
(11P)
TXL
FMDET
IC2001
BU4052BCF
Input Selector
IC2002
Buffer
-6dB -10dB
G 3/3
CONTROL ASSY
B 2/2
TV CONNECT ASSY
IC5701
BU1924F
RDS IC
CN471
(19P)
CN5504
(19P)
RDS
RDS DATA
CN8007
(19P)
CN8902
(19P)
LIN
FL
SLBO
IC8401
AK4529V0
8ch Codec IC
IC8301 - IC8303
LPF
IC8401
IC8402
LFE MIX
/Gain SEL
IC8501 - IC8506
Balance
Out
CN8904
(12P)
FLP
FLN
To SUB WOOFER
CN5506
(16P)
CN8011
(19P)
CN8903
(19P)
IC8652
Buffer
Control Data
IC8501
DSPD56367PV150
DSP IC
IC3901
BD3812F
HP VOL IC
IC3902
HP AMP
CN8003
(13P)
CN8901
(13P)
OPTIN
IC8201
AK4114VQ
DIR & DIT IC
H DSP ASSY
RDS DATA
IC5501
PDC117
PT μ-com
IC801
PEG014
Tuner μ-com
IC804
BR24L32F-W
EEP ROM
IC802
RS5C372A
Real Time
Clock
Control
Data
JA4601
DIGITAL
OPT IN
JA4602
DIGITAL
OPT OUT
JA5901
SR +
IC5901
TC7WH08FU
CN5502
(15P)
CN803
(23P)
CN5802
(15P)
J 2/2 DISPLAY ASSY
O KEY L ASSY
P KEY R ASSY
K LED ASSY
N IR ASSY
IC5801
PT6302L0-003
FL Driver
V5801
FL
Key
SW
X5151
IR
L 3/3 TRADE ASSY
CN806
(23P)
CN808
(23P)
C 3/3 JACK ASSY
CN704
(23P)
CN703
(17P)
M 2/2 FRONT
JACK ASSY
CN5201
(17P)
JA5301
PHONES

A

B

C

D

E

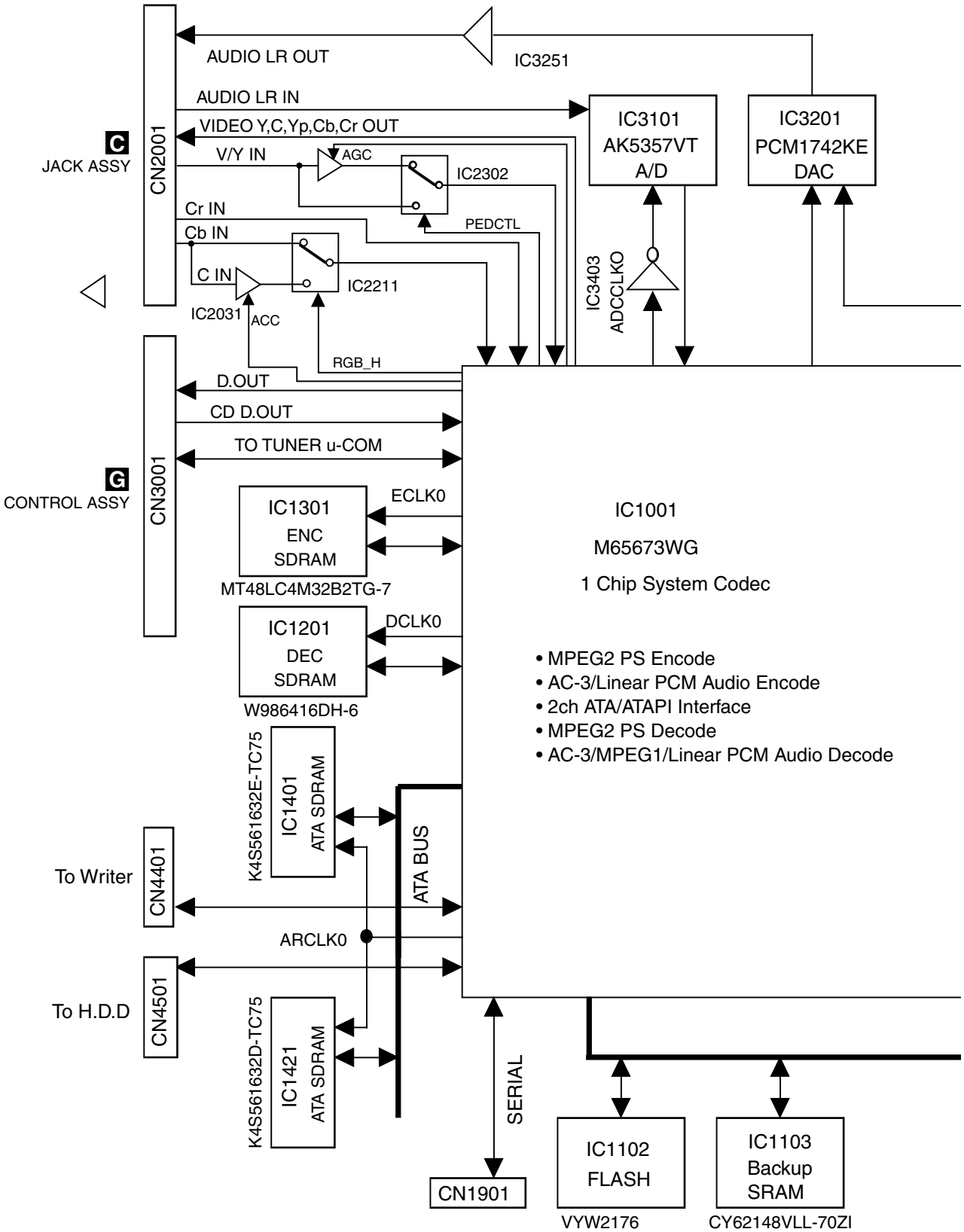
F

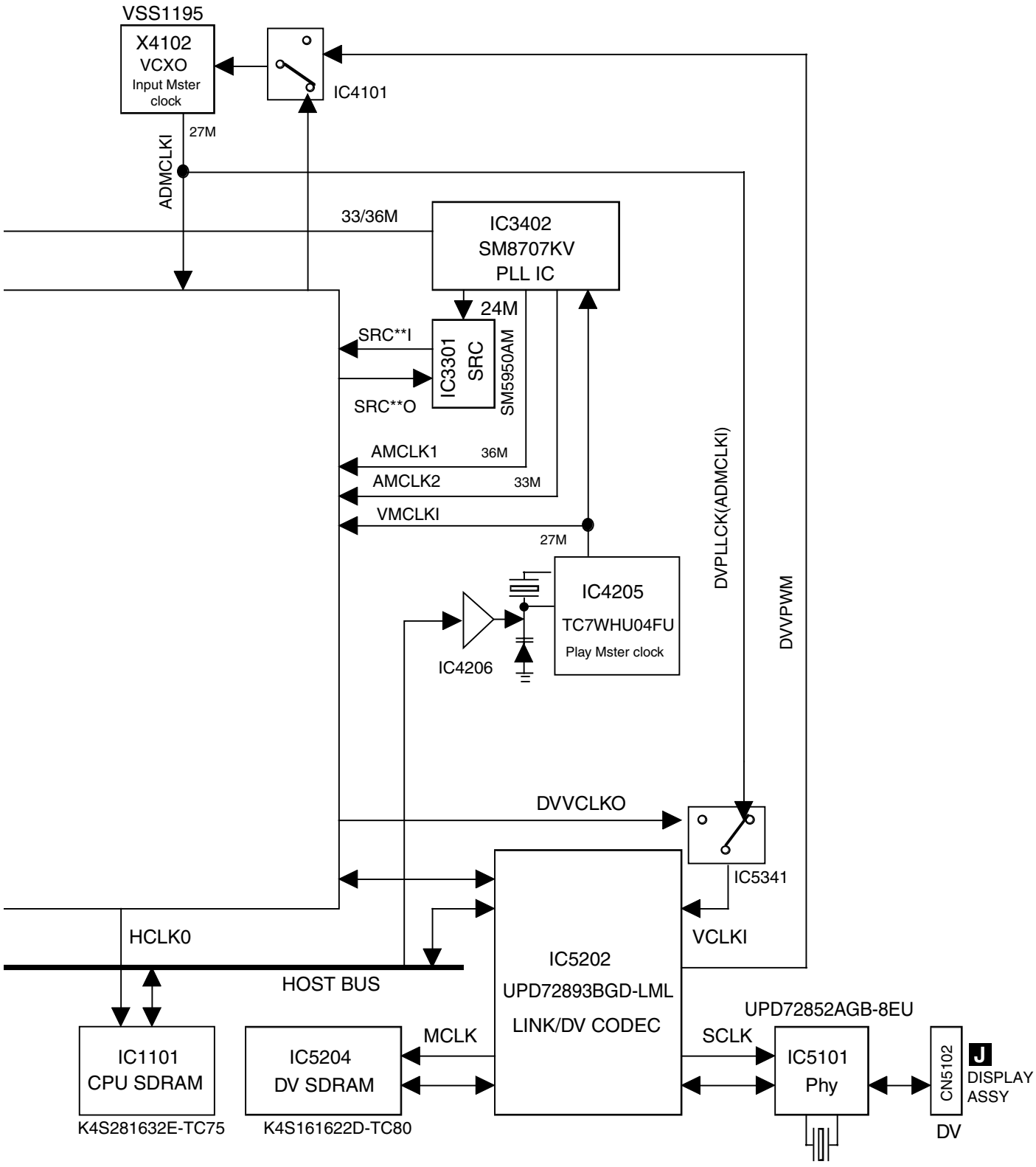


5 6 7 8

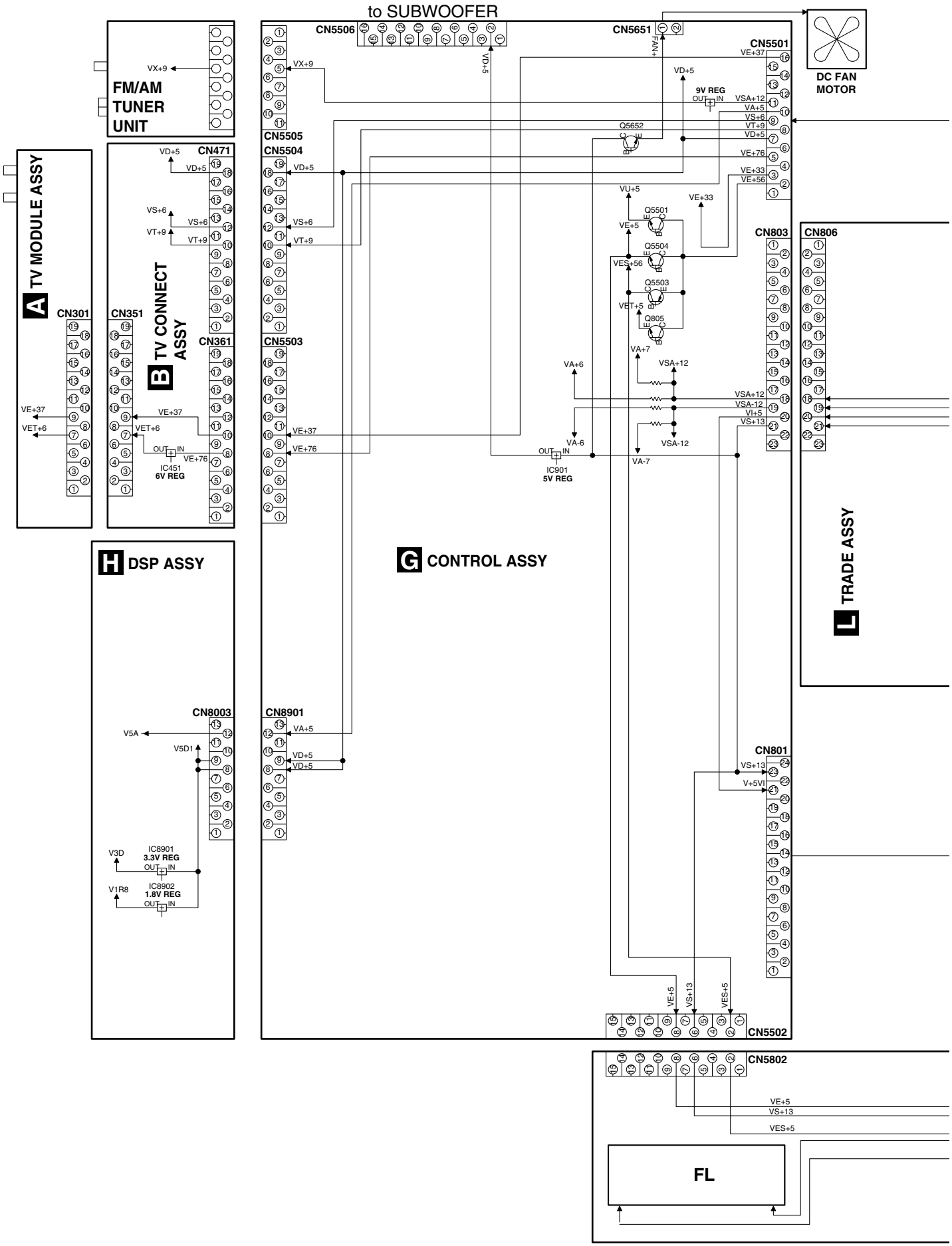
## 3.1.2 MAIN ASSY BLOCK DIAGRAM

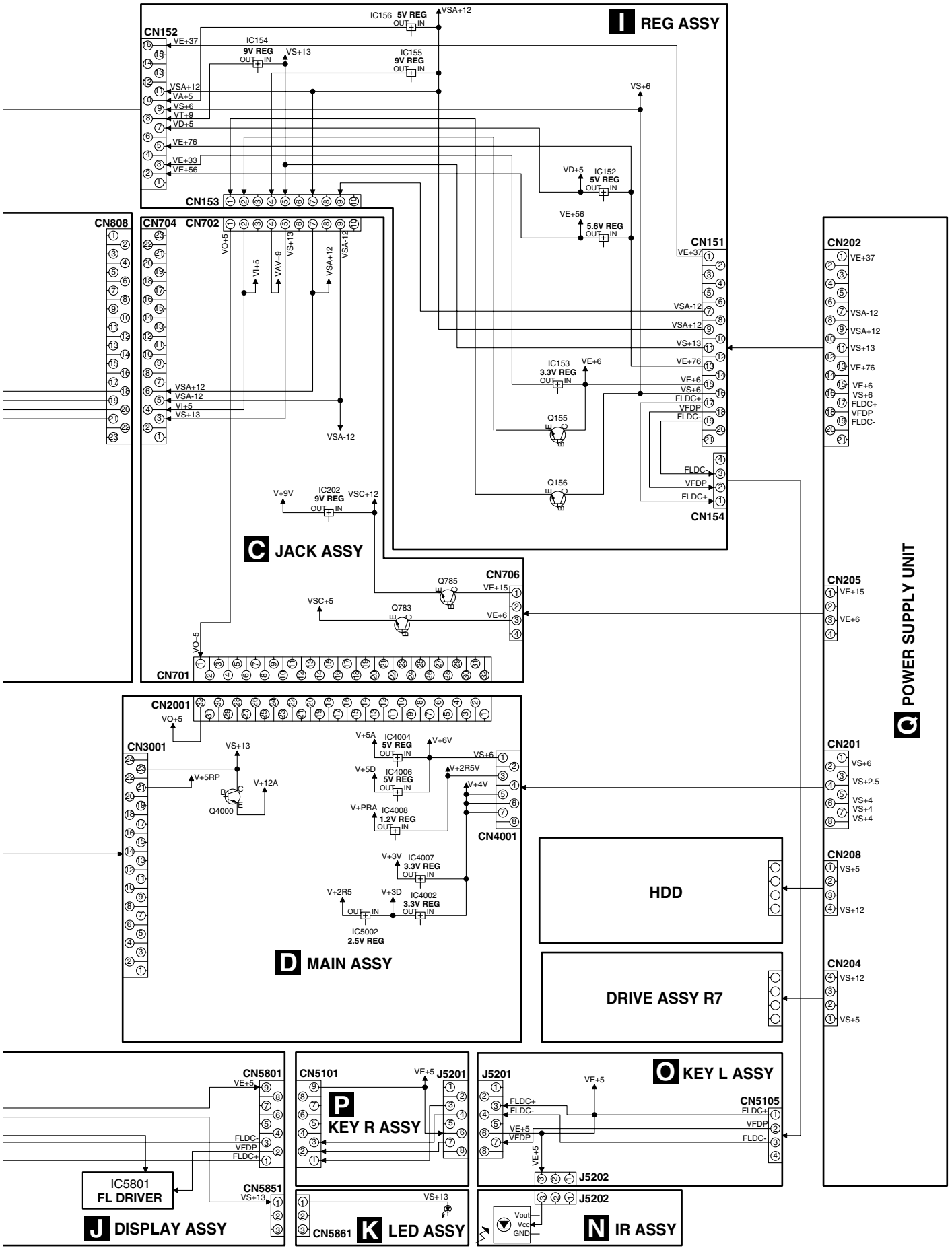
**D MAIN ASSY (VWV2013)**



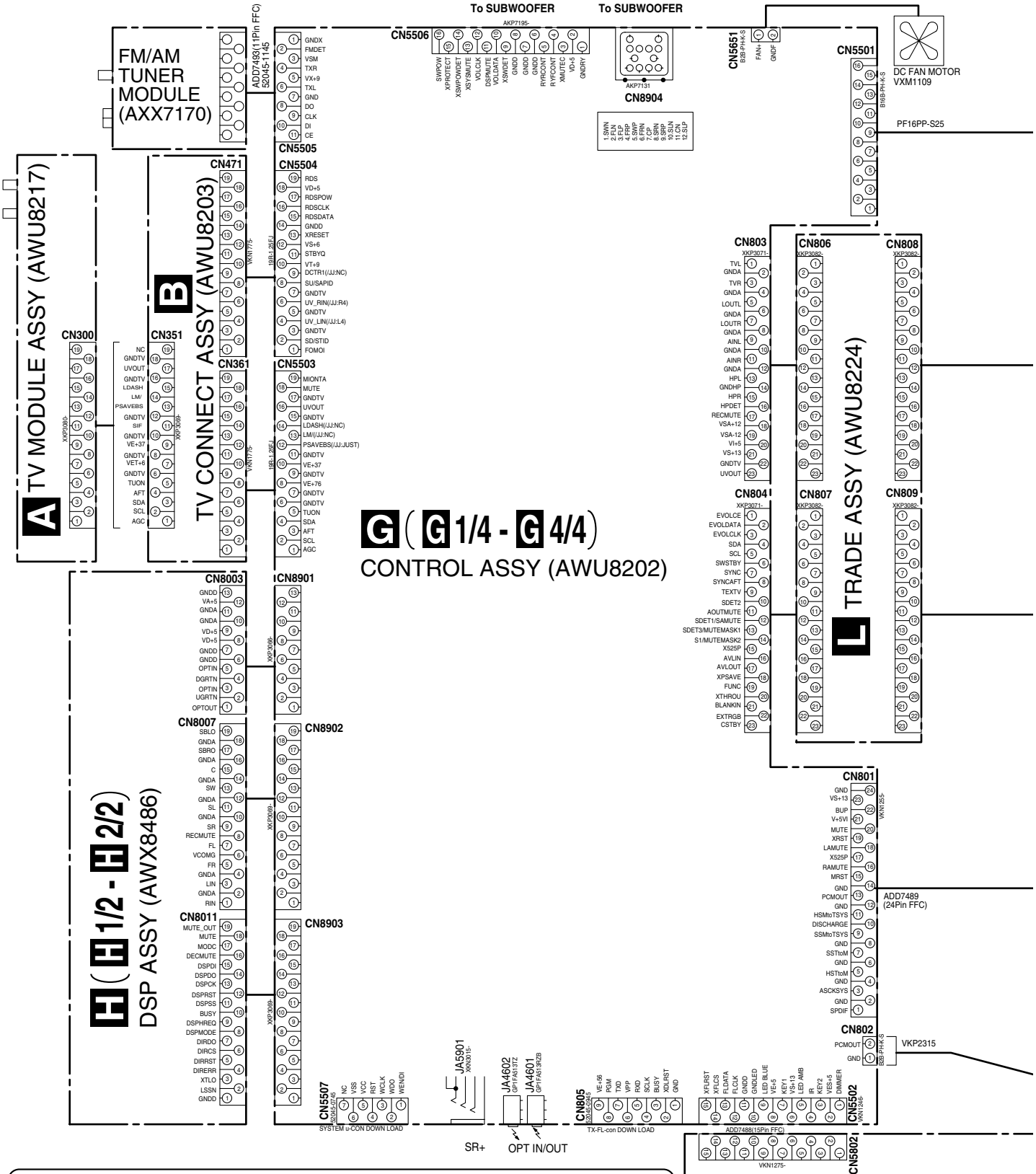

VSS1195
X4102
VCXO
Input Mster clock
IC4101
27M
ADMCLKI
33/36M
IC3402
SM8707KV
PLL IC
24M
SRC**I
IC3301
SRC
SM5950AM
SRC**O
AMCLK1
36M
AMCLK2
33M
VMCLKI
27M
IC4205
TC7WHU04FU
Play Mster clock
IC4206
DVPLLCK(ADMCLKI)
DVVPWM
DVVCLKO
IC5341
HCLK0
VCLKI
IC5202
UPD72893BGD-LML
LINK/DV CODEC
HOST BUS
UPD72852AGB-8EU
MCLK
SCLK
IC1101
CPU SDRAM
K4S281632E-TC75
IC5204
DV SDRAM
K4S161622D-TC80
IC5101
Phy
CN5102
J
DISPLAY ASSY
DV

## 3.1.3 POWER SUPPLY BLOCK DIAGRAM

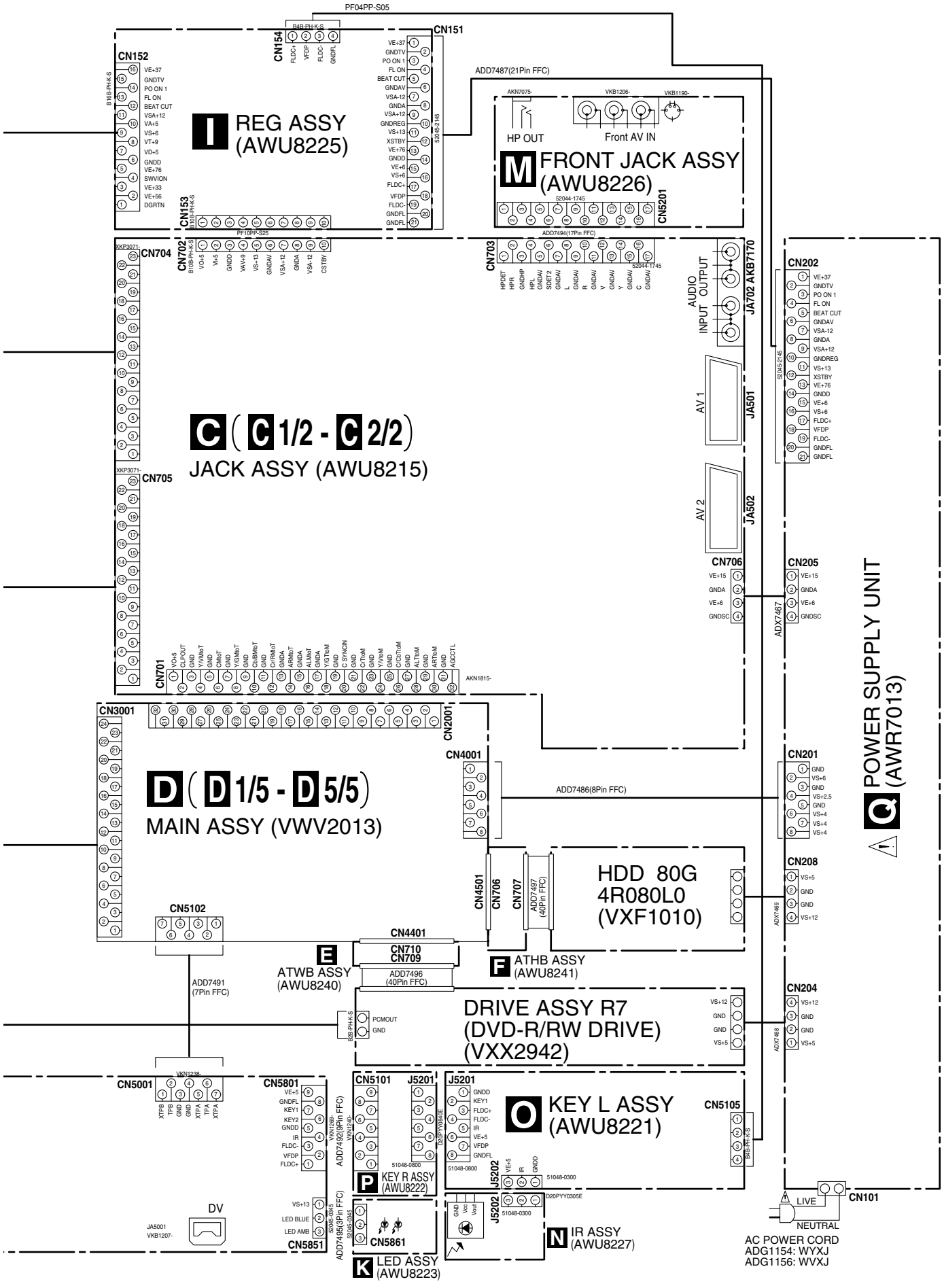



I REG ASSY
CN152
CN153
IC156 5V REG
IC154 9V REG
IC155 9V REG
IC152 5V REG
5.6V REG
CN151
CN154
CN808
CN704
CN702
C JACK ASSY
IC153 3.3V REG
IC202 9V REG
Q155
Q156
Q785
Q783
CN706
CN701
CN202
CN205
CN201
CN208
CN204
Q POWER SUPPLY UNIT
CN2001
CN3001
IC4004 5V REG
IC4006 5V REG
IC4008 1.2V REG
IC4007 3.3V REG
IC4002 3.3V REG
IC5002 2.5V REG
Q4000
CN4001
D MAIN ASSY
HDD
DRIVE ASSY R7
CN5801
IC5801 FL DRIVER
CN5851
J DISPLAY ASSY
CN5101
P KEY R ASSY
J5201
O KEY L ASSY
CN5105
J5202
CN5861
K LED ASSY
N IR ASSY

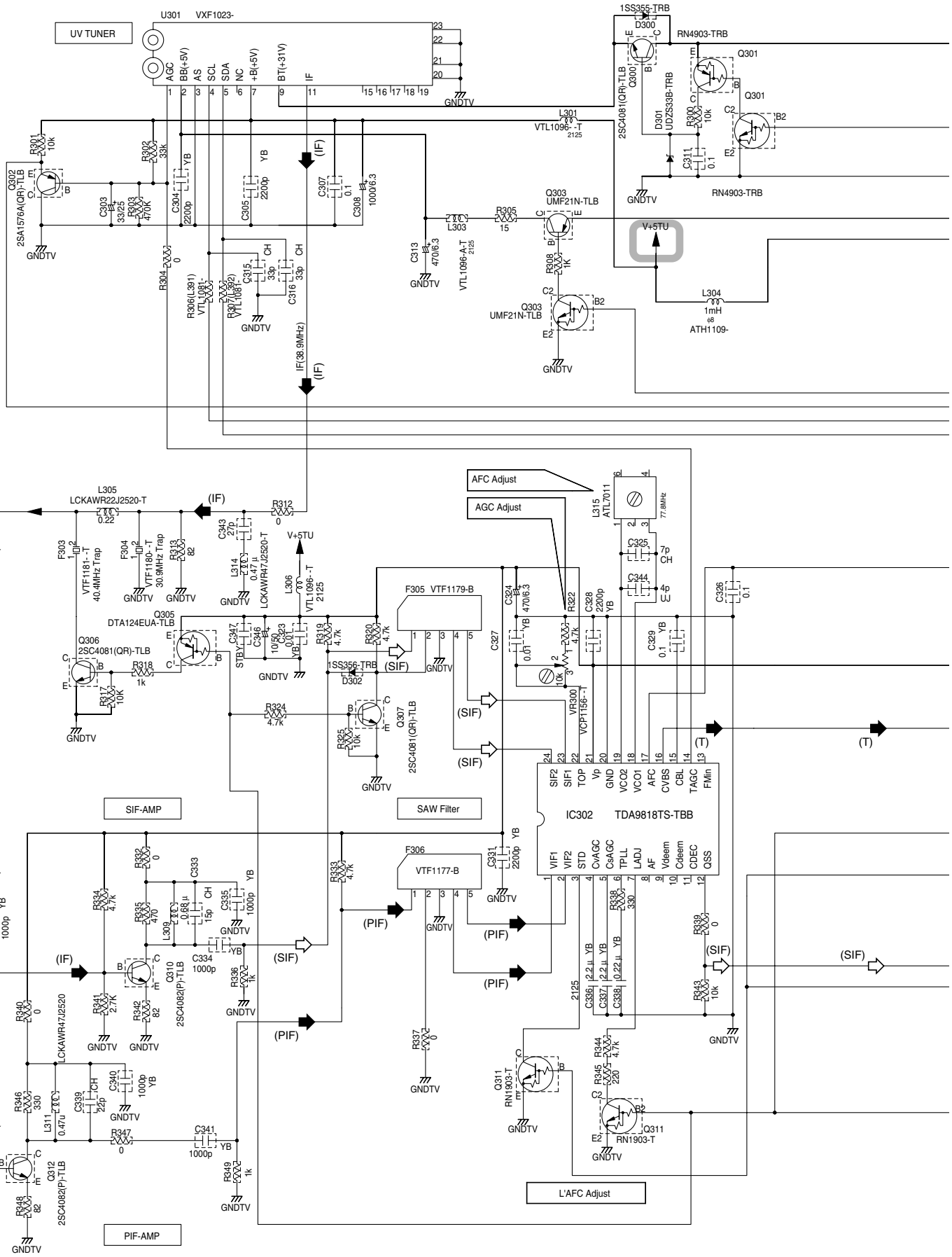
# 3.2 OVERALL WIRING CONNECTION DIAGRAM

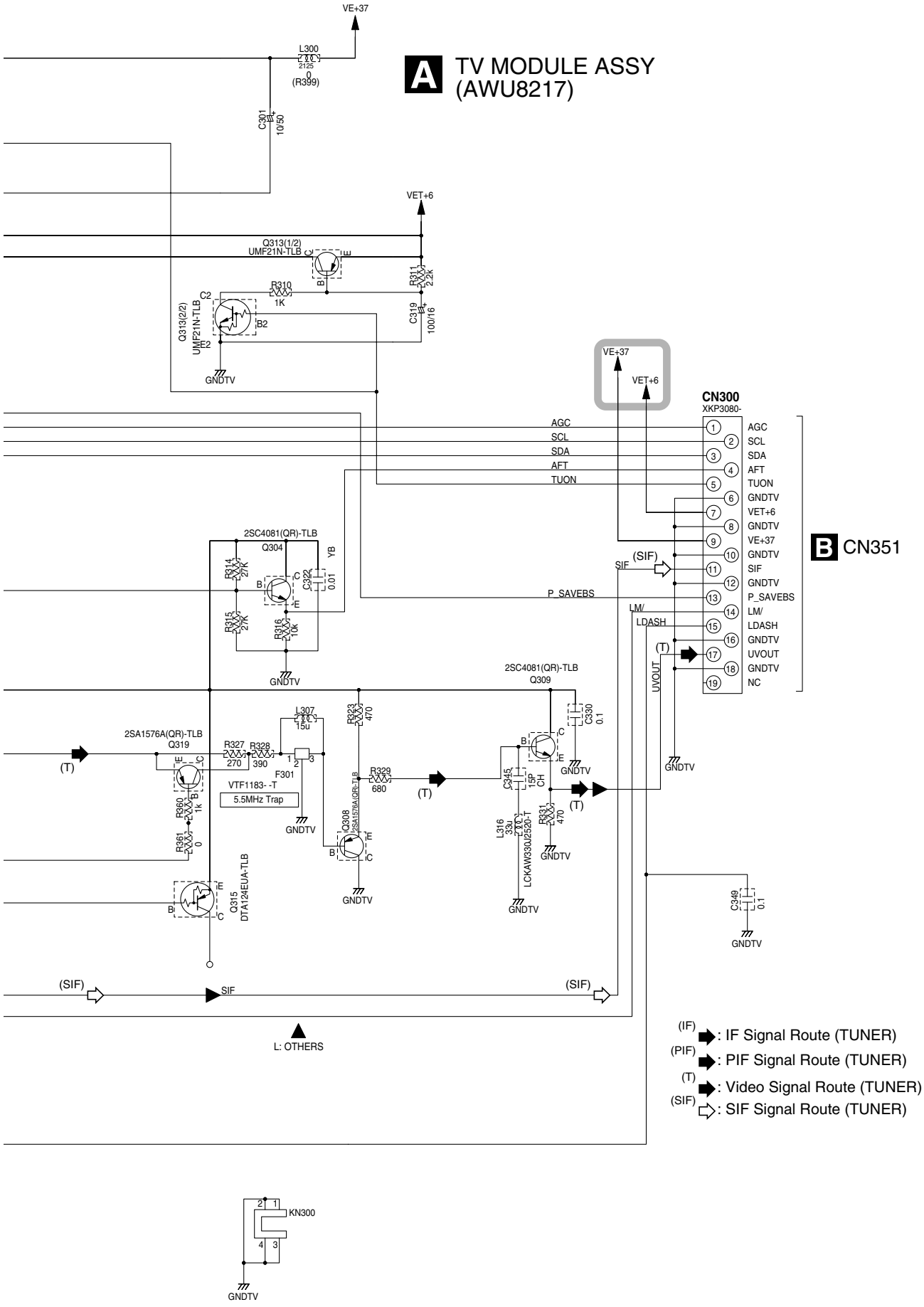



- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.

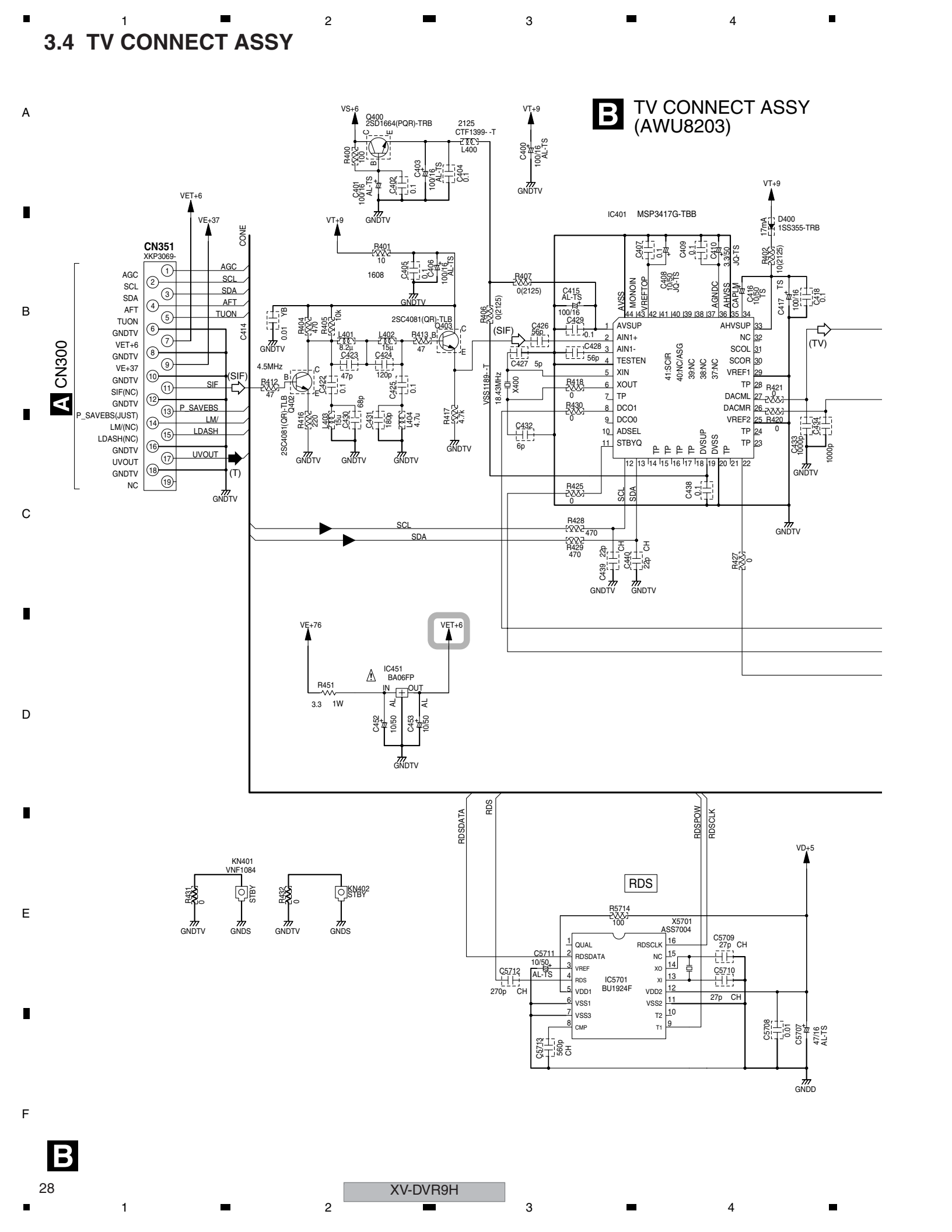

I REG ASSY (AWU8225)
M FRONT JACK ASSY (AWU8226)
HP OUT
Front AV IN
C (C 1/2 - C 2/2)
JACK ASSY (AWU8215)
D (D 1/5 - D 5/5)
MAIN ASSY (VWV2013)
Q POWER SUPPLY UNIT (AWR7013)
HDD 80G
4R080L0
(VXF1010)
E ATWB ASSY (AWU8240)
F ATHB ASSY (AWU8241)
DRIVE ASSY R7
(DVD-R/RW DRIVE)
(VXX2942)
O KEY L ASSY (AWU8221)
P KEY R ASSY (AWU8222)
K LED ASSY (AWU8223)
N IR ASSY (AWU8227)
DV
LIVE
NEUTRAL
AC POWER CORD
ADG1154: WYXJ
ADG1156: WVXJ
PF04PP-S05
ADD7487(21Pin FFC)
ADD7494(17Pin FFC)
ADD7486(8Pin FFC)
ADD7491
(7Pin FFC)
ADD7496
(40Pin FFC)
ADD7497
(40Pin FFC)
ADD7492(9Pin FFC)
ADD7495(3Pin FFC)
PF10PP-S25
CN151
CN152
CN153
CN154
CN201
CN202
CN204
CN205
CN208
CN701
CN702
CN703
CN704
CN705
CN706
CN707
CN2001
CN3001
CN4001
CN4401
CN4501
CN5001
CN5102
CN5105
CN5801
CN5851
CN5861
CN101
CN5101
J5201
J5202
JA501
JA502
JA702 AKB7170
AV 1
AV 2
AUDIO
INPUT OUTPUT
ADX7467
ADX7468
ADX7469
AKN7075-
VKB1206-
VKB1190-
AKN1815-
VKN1238-
VKN1239-
VKN1240-
JA5001
VKB1207-
52045-2145
52044-1745
51048-0800
51048-0300
D20PYY0305E
B16B-PH-K-S
B10B-PH-K-S
B8B-PH-K-S
B4B-PH-K-S
XKP3071-

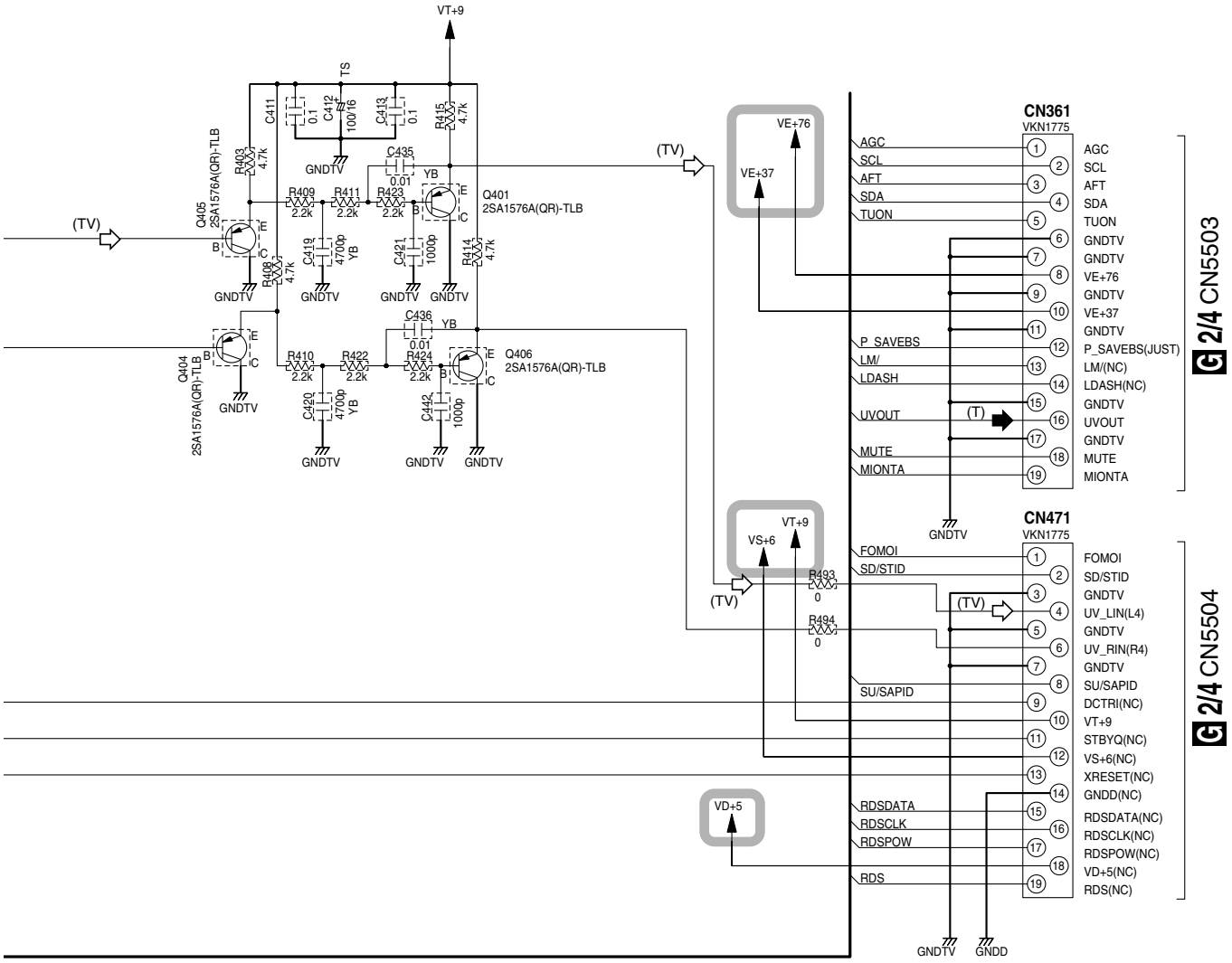
# 3.3 TV MODULE ASSY




A TV MODULE ASSY (AWU8217)
VE+37
L300
2125
0
(R399)
C301
10/50
VET+6
Q313(1/2)
UMF21N-TLB
R310
1K
R311
2.2K
C319
100/16
Q313(2/2)
UMF21N-TLB
C2
B2
E2
GNDTV
CN300
XKP3080-
AGC
SCL
SDA
AFT
TUON
GNDTV
VET+6
GNDTV
VE+37
GNDTV
SIF
GNDTV
P_SAVEBS
LM/
LDASH
GNDTV
UVOUT
GNDTV
NC
B CN351
2SC4081(QR)-TLB
Q304
R314
27K
R315
27K
R316
10k
C322
0.01
YB
2SC4081(QR)-TLB
Q309
C330
0.1
2SA1576A(QR)-TLB
Q319
R327
270
R328
390
F301
VTF1183- -T
5.5MHz Trap
L307
15u
R323
470
R329
680
C345
15P
CH
L316
33u
LCKAW330J2520-T
R331
470
R360
1k
R361
0
Q308
2SA1576A(QR)-TLB
Q315
DTA124EUA-TLB
C349
0.1
(T)
(SIF)
SIF
L: OTHERS
KN300
(IF) : IF Signal Route (TUNER)
(PIF) : PIF Signal Route (TUNER)
(T) : Video Signal Route (TUNER)
(SIF) : SIF Signal Route (TUNER)

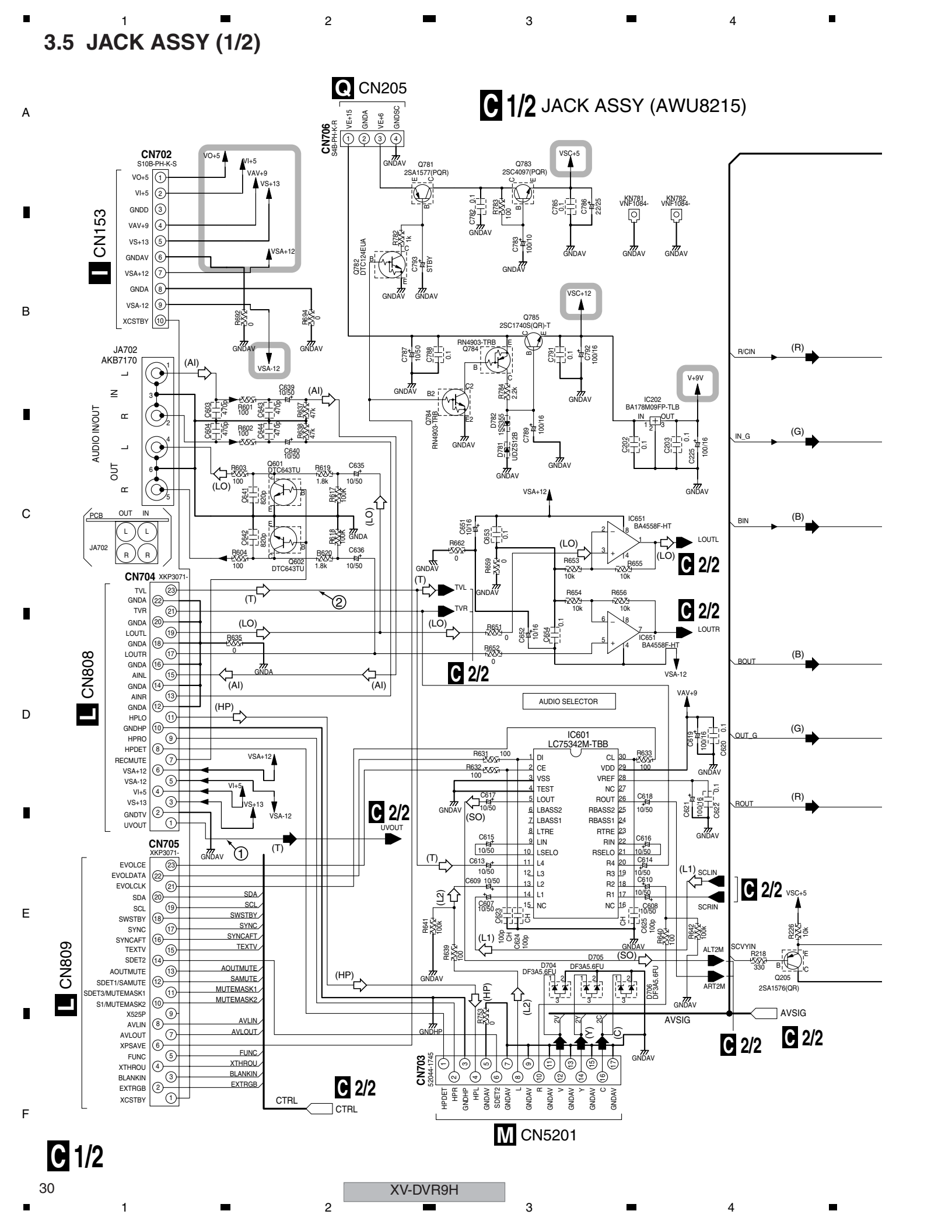
# 3.4 TV CONNECT ASSY

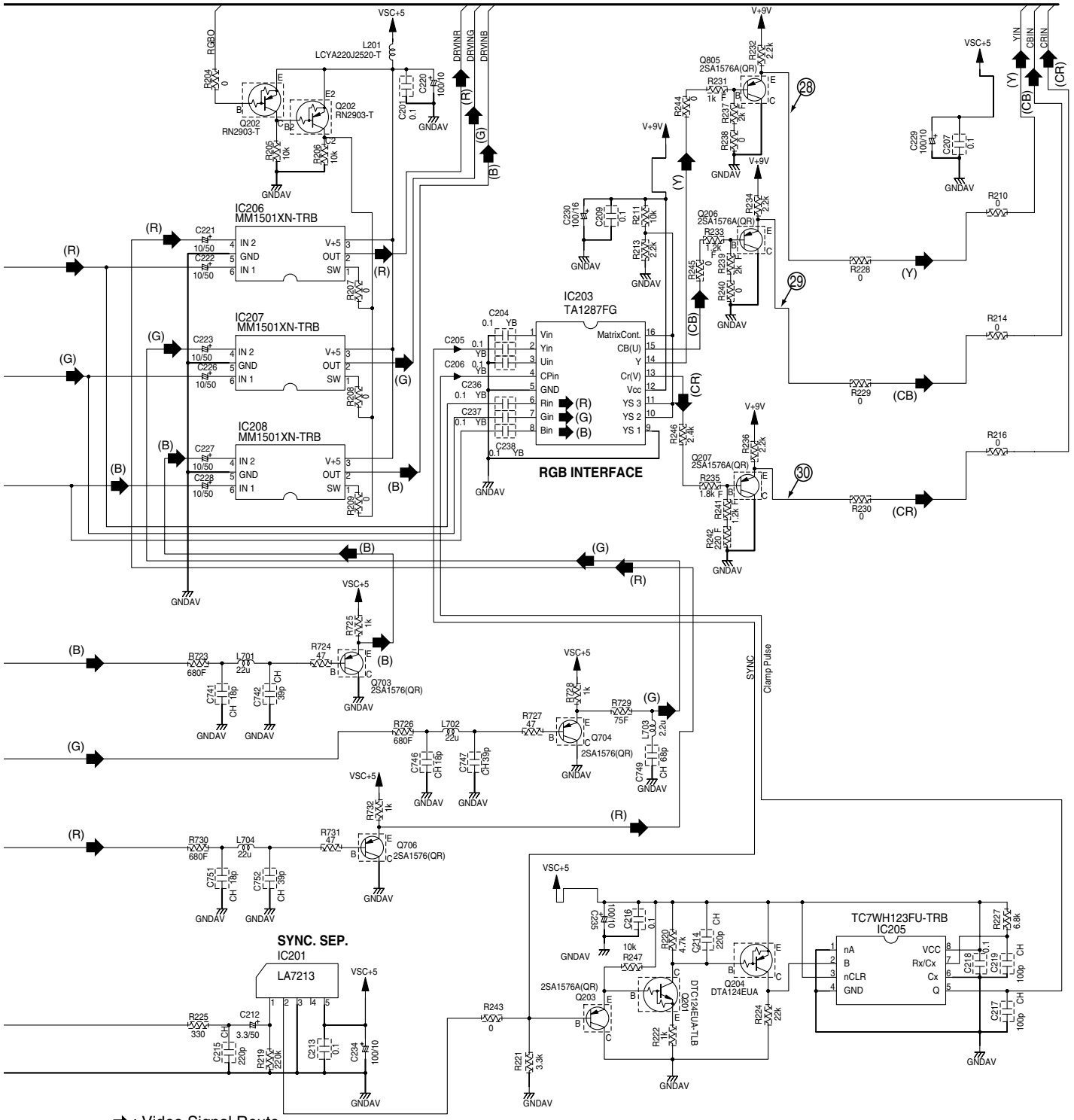





(T) ➡: Video Signal Route (TUNER)
(TV) ⇨: Audio Signal Route (TV)
(SIF) ⇨: SIF Signal Route (TUNER)

# 3.5 JACK ASSY (1/2)



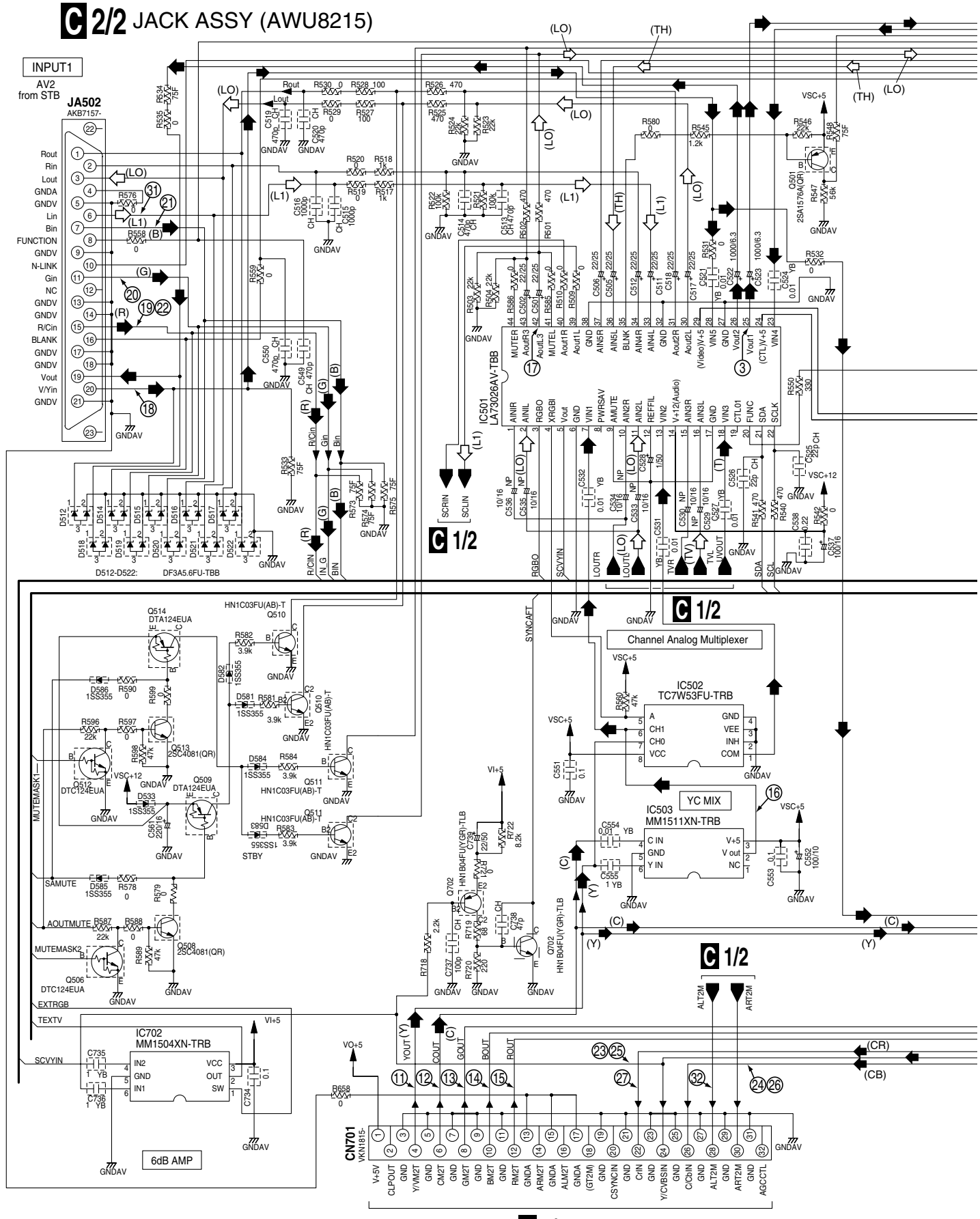


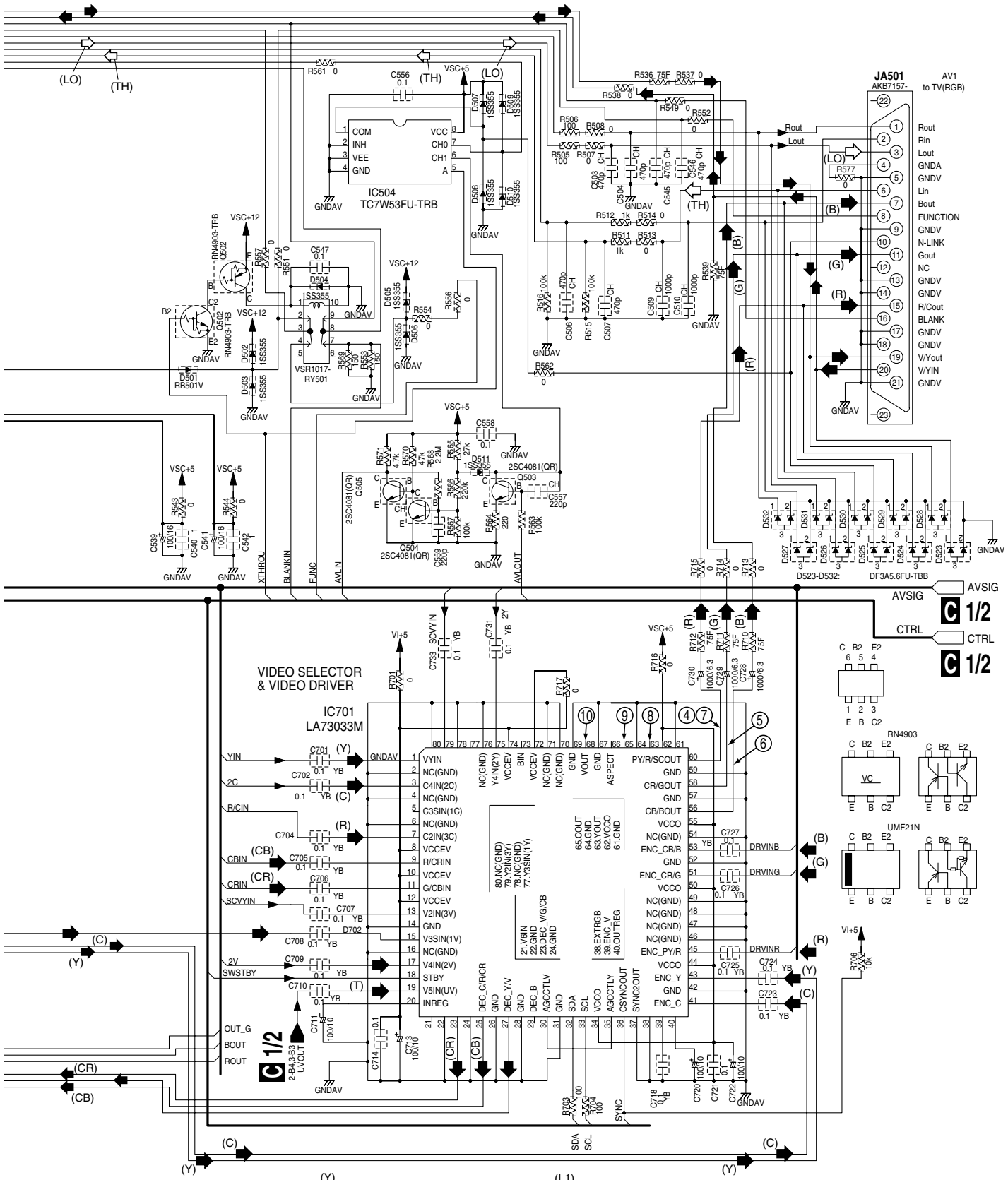

: Video Signal Route
(T) : Video Signal Route (TUNER)
(R) : Video Signal Route (R)
(G) : Video Signal Route (G)
(B) : Video Signal Route (B)
(Y) : Video Signal Route (Y)
(CB) : Video Signal Route (CB)
(CR) : Video Signal Route (CR)

(L1) : Audio Signal Route (LINE 1 IN)
(L2) : Audio Signal Route (LINE 2 IN)
(TV) : Audio Signal Route (TV)
(LO) : Audio Signal Route (LINE OUT)
(SO) : Audio Signal Route (AUDIO SELECTOR OUT)
(AI) : Audio Signal Route (AUDIO IN)
(HP) : Audio Signal Route (H.P)

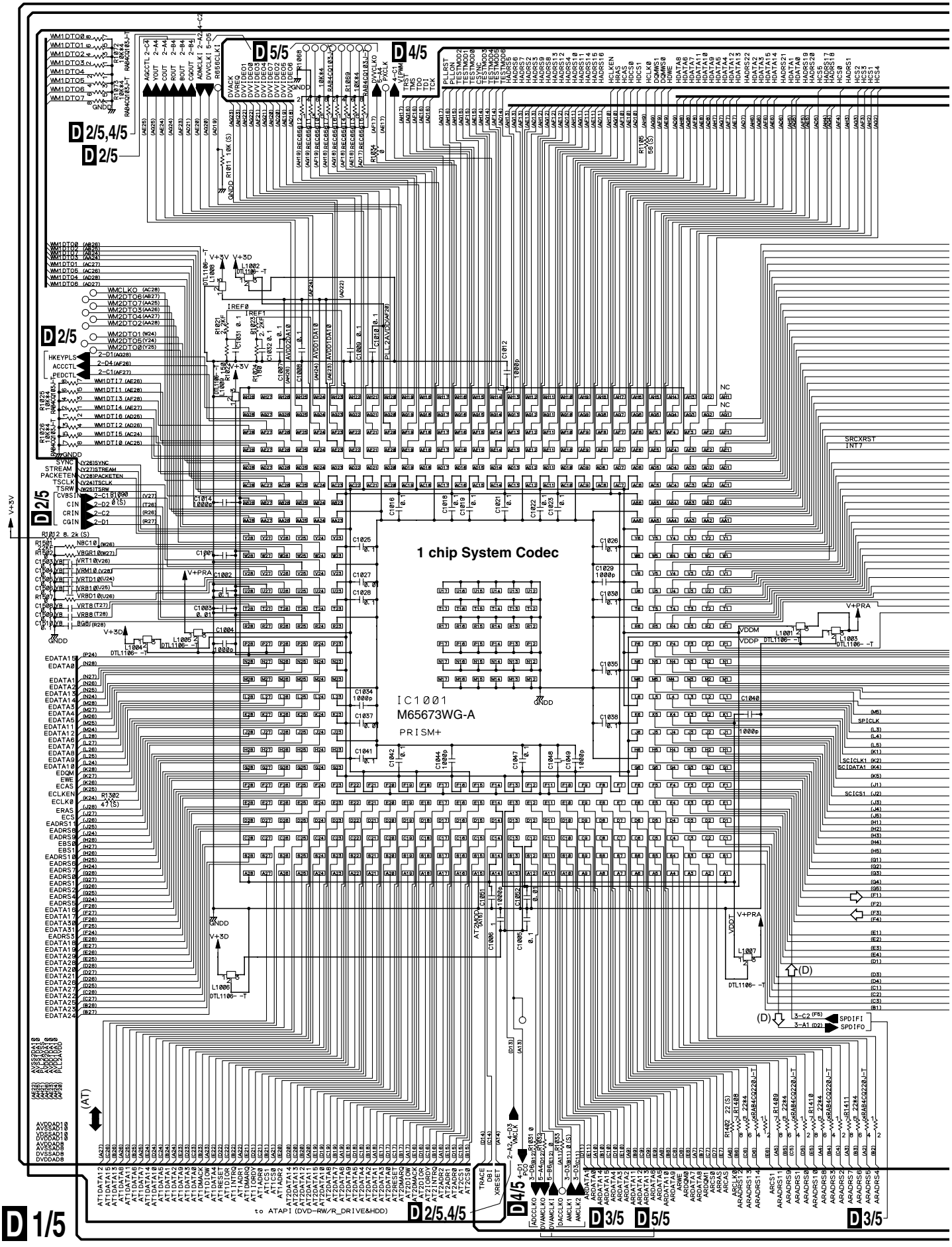
**C 1/2**

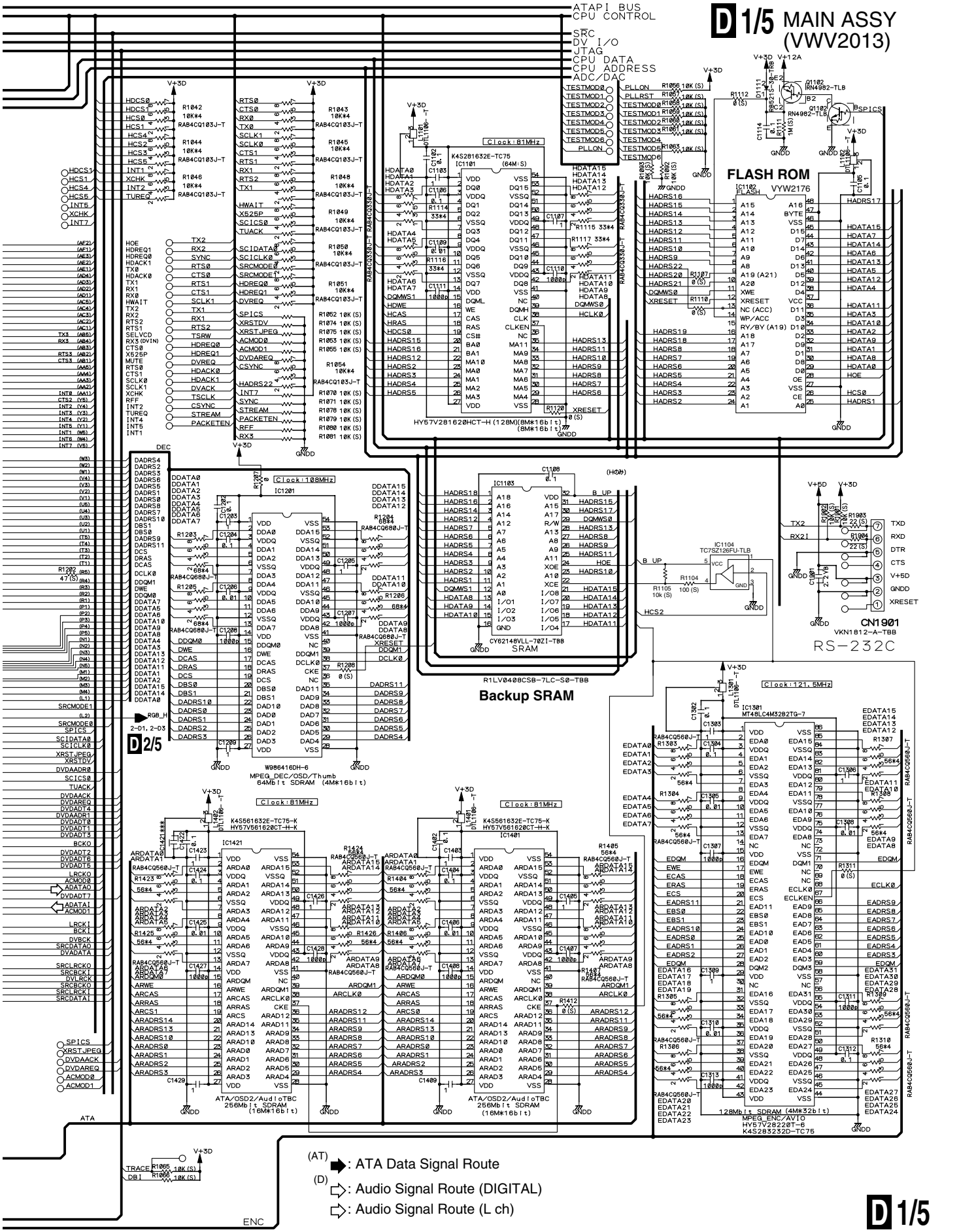
# 3.6 JACK ASSY (2/2)




JA501
AKB7157-
AV1
to TV(RGB)
Rout
Rin
Lout
GNDA
GNDV
Lin
Bout
FUNCTION
GNDV
N-LINK
Gout
NC
GNDV
GNDV
R/Cout
BLANK
GNDV
GNDV
V/Yout
V/YIN
GNDV
IC504
TC7W53FU-TRB
COM
INH
VEE
GND
VCC
CH0
CH1
A
IC701
LA73033M
VIDEO SELECTOR
& VIDEO DRIVER
VYIN
NC(GND)
C4IN(2C)
NC(GND)
C3SIN(1C)
NC(GND)
C2IN(3C)
VCCEV
R/CRIN
VCCEV
G/CBIN
VCCEV
V2IN(3V)
GND
V3SIN(1V)
NC(GND)
V4IN(2V)
STBY
V5IN(UV)
INREG
PY/R/SCOUT
GND
CR/GOUT
GND
CB/BOUT
VCCO
NC(GND)
ENC_CB/B
GND
ENC_CR/G
VCCO
NC(GND)
NC(GND)
NC(GND)
NC(GND)
ENC_PY/R
VCCO
ENC_Y
GND
ENC_C
DRVINB
DRVING
DRVINR
YIN
2C
R/CIN
CBIN
CRIN
SCVYIN
2V
SWSTBY
OUT_G
BOUT
ROUT
UVOUT
RN4903
UMF21N
AVSIG
CTRL
C 1/2
C 2/2
D523-D532:
DF3A5.6FU-TBB
: Video Signal Route
: Video Signal Route (TUNER)
: Video Signal Route (R)
: Video Signal Route (G)
: Video Signal Route (B)
: Video Signal Route (Y)
: Video Signal Route (C)
: Video Signal Route (CB)
: Video Signal Route (CR)
: Audio Signal Route (LINE 1 IN)
: Audio Signal Route (for SCART through)
: Audio Signal Route (TV)
: Audio Signal Route (LINE OUT)
: Audio Signal Route (AUDIO SELECTOR OUT)

# 3.7 MAIN ASSY (1/5)




D 1/5 MAIN ASSY (VWV2013)
ATAPI BUS
CPU CONTROL
SRC
DV I/O
JTAG
CPU DATA
CPU ADDRESS
ADC/DAC
FLASH ROM
VYW2176
SRAM
Backup SRAM
RS-232C
CN1901
MPEG_DEC/OSD/Thumb
64Mbit SDRAM (4M×16bit)
MPEG_ENC/AVIO
128Mbit SDRAM (4M×32bit)
ATA/OSD2/AudioTBC
256Mbit SDRAM (16M×16bit)
(AT) : ATA Data Signal Route
(D) : Audio Signal Route (DIGITAL)
: Audio Signal Route (L ch)
D 2/5
D 1/5

# 3.8 MAIN ASSY (2/5)

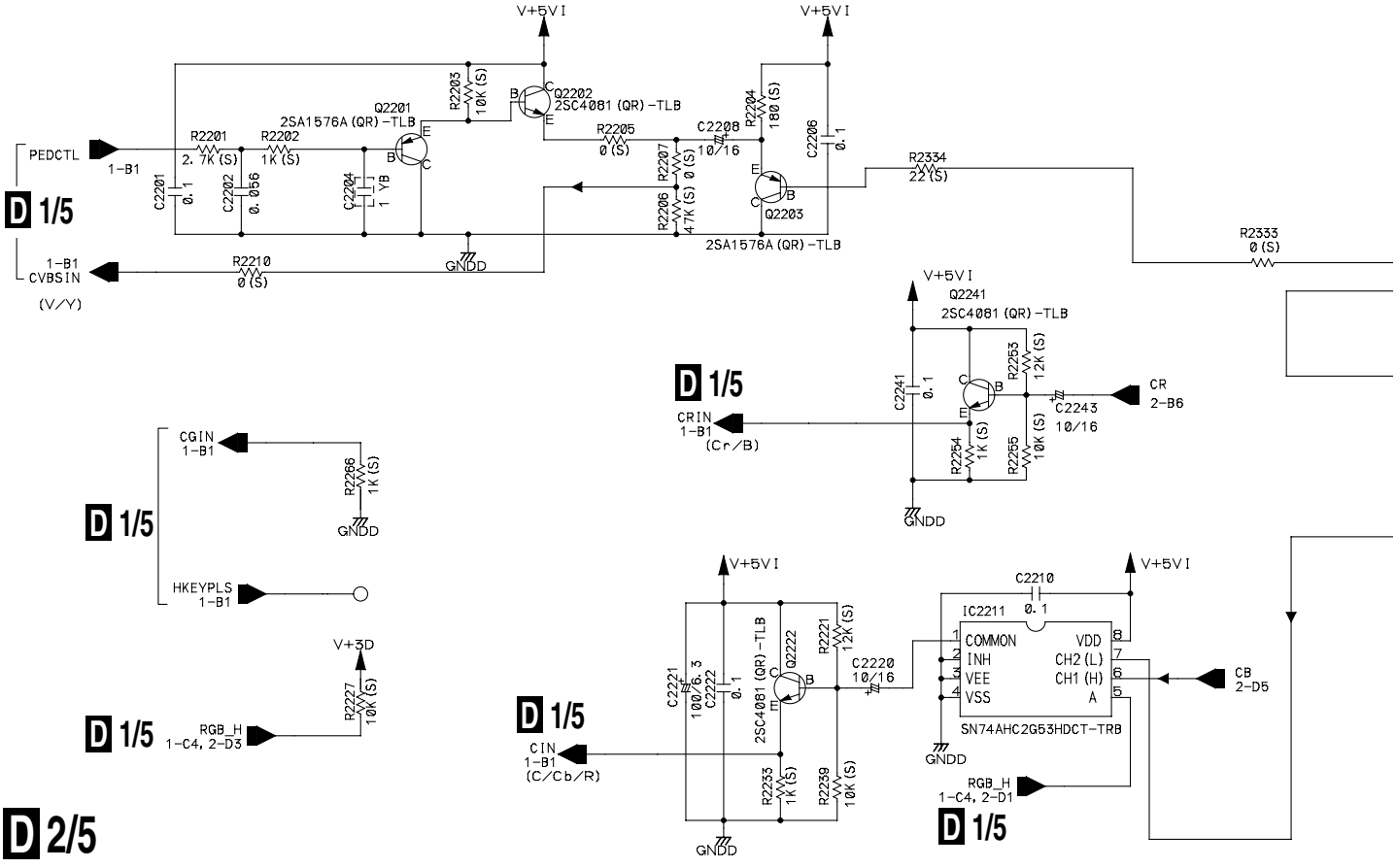
A

## D 2/5 MAIN ASSY (VWV2013)

B

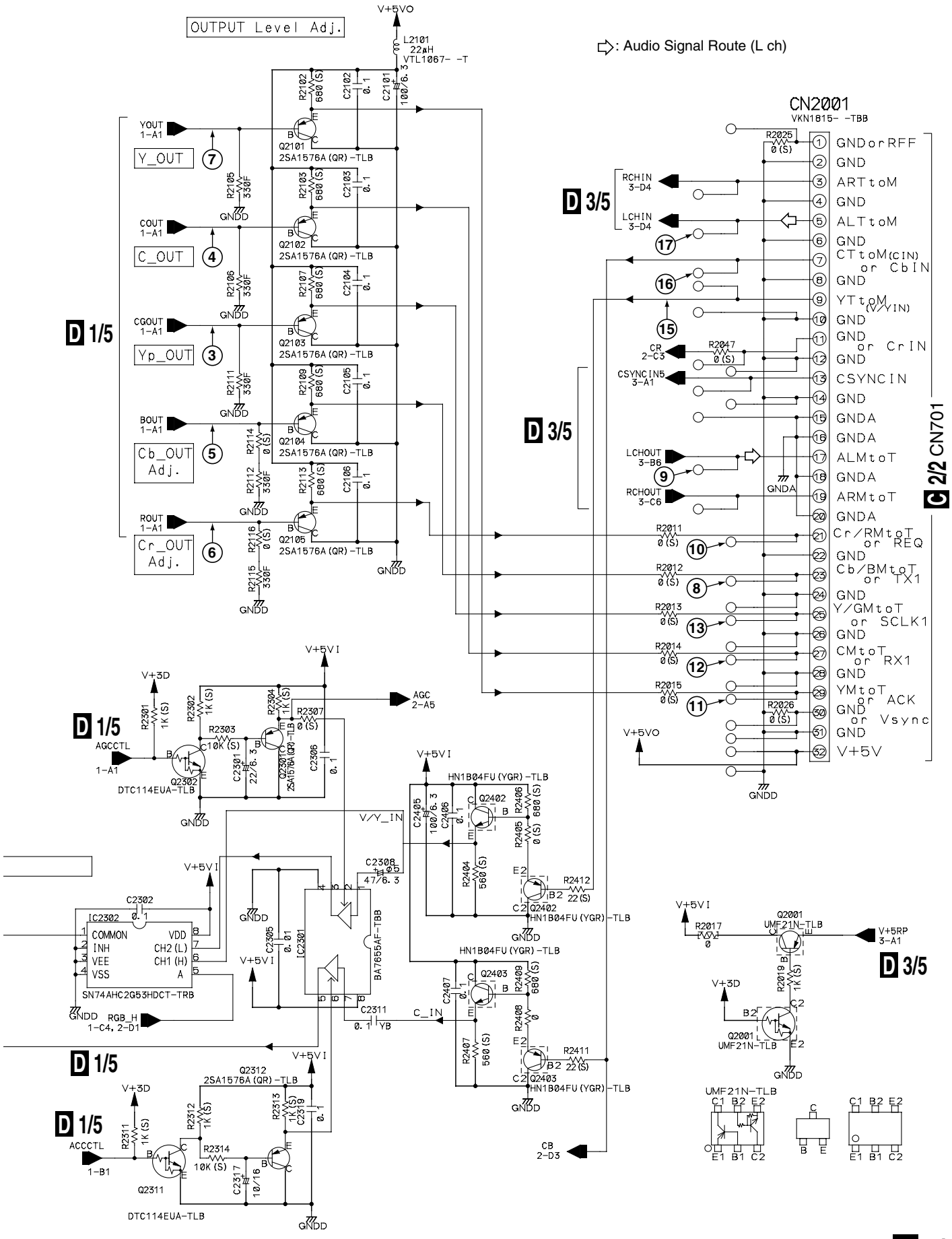
C

D

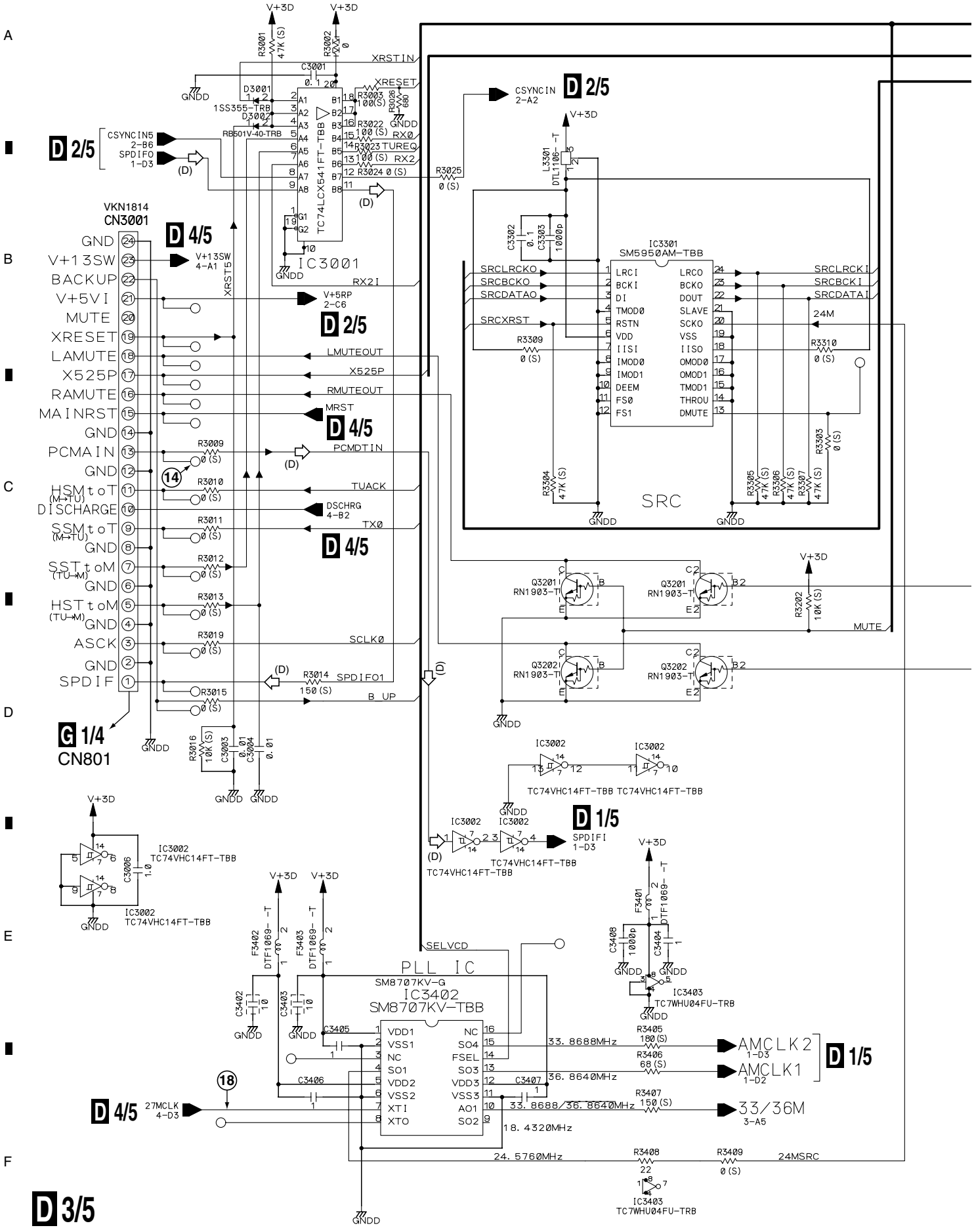



E

F


OUTPUT Level Adj.
: Audio Signal Route (L ch)
V+5VO
L2101
22µH
VTL1067- -T
CN2001
VKN1615- -TBB
D 3/5
D 1/5
C 2/2 CN701
Y_OUT
C_OUT
Yp_OUT
Cb_OUT Adj.
Cr_OUT Adj.
Q2101 2SA1576A(QR)-TLB
Q2102 2SA1576A(QR)-TLB
Q2103 2SA1576A(QR)-TLB
Q2104 2SA1576A(QR)-TLB
Q2105 2SA1576A(QR)-TLB
GNDD
GNDA
V+5VI
V+3D
AGC
AGCCTL
ACCCTL
RGB_H
V/Y_IN
C_IN
CB
V+5RP
IC2302
SN74AHC2G53HDCT-TRB
IC2301
BA7655AF-TBB
Q2302 DTC114EUA-TLB
Q2311 DTC114EUA-TLB
Q2312 2SA1576A(QR)-TLB
Q2402 HN1B04FU(YGR)-TLB
Q2403 HN1B04FU(YGR)-TLB
Q2001 UMF21N-TLB
GNDorRFF
GND
ARTtoM
ALTtoM
CTtoM(CIN) or CbIN
YTtoM(V/YIN)
GND or CrIN
CSYNCIN
ALMtoT
ARMtoT
Cr/RMtoT or REQ
Cb/BMtoT or TX1
Y/GMtoT or SCLK1
CMtoT or RX1
YMtoT or ACK
GND or Vsync
V+5V

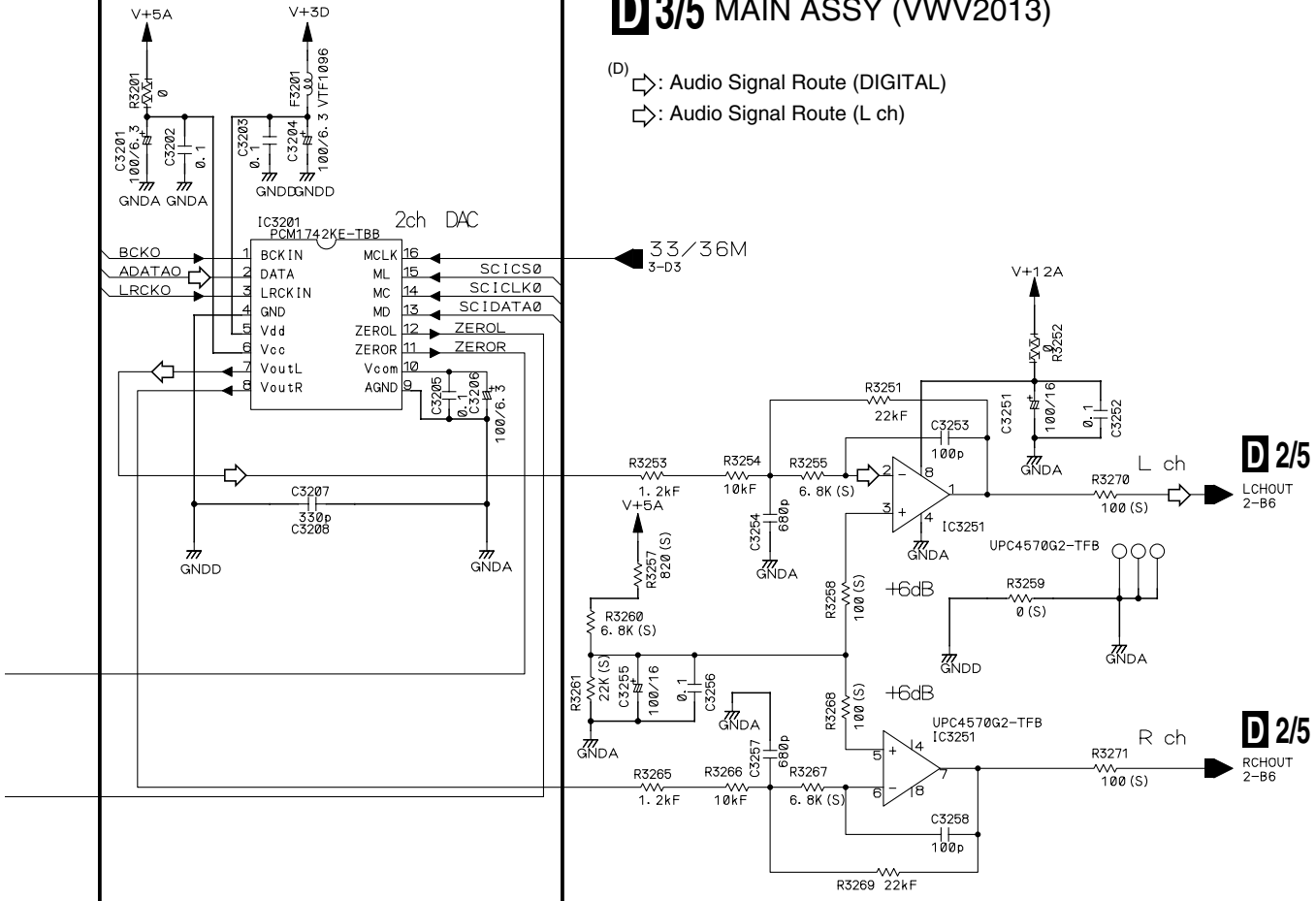
# 3.9 MAIN ASSY (3/5)

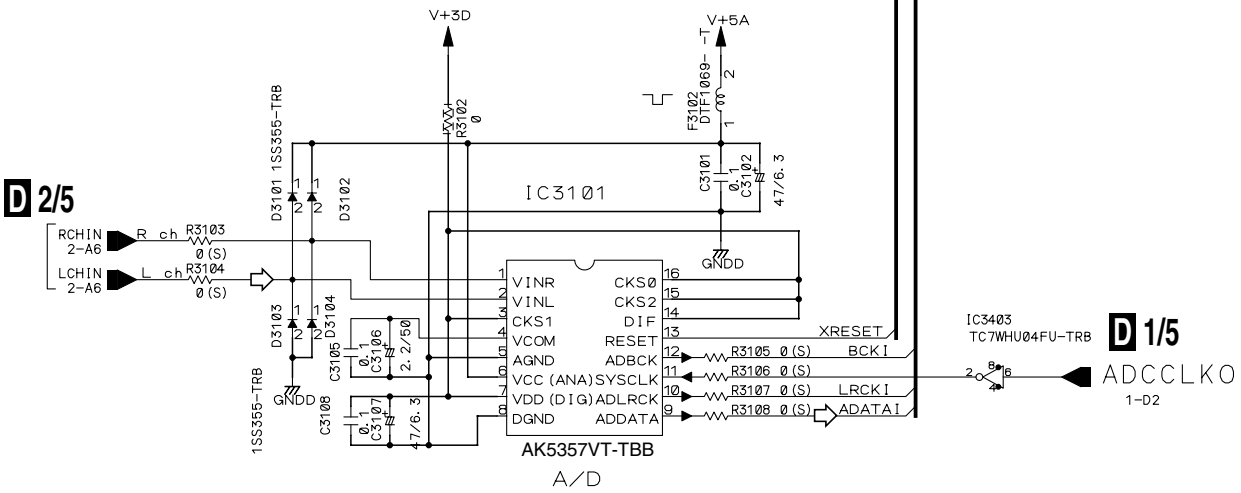


CPU CONTROL BUS
DAC/ADC
SRC
D 1/5

# D 3/5 MAIN ASSY (VWV2013)

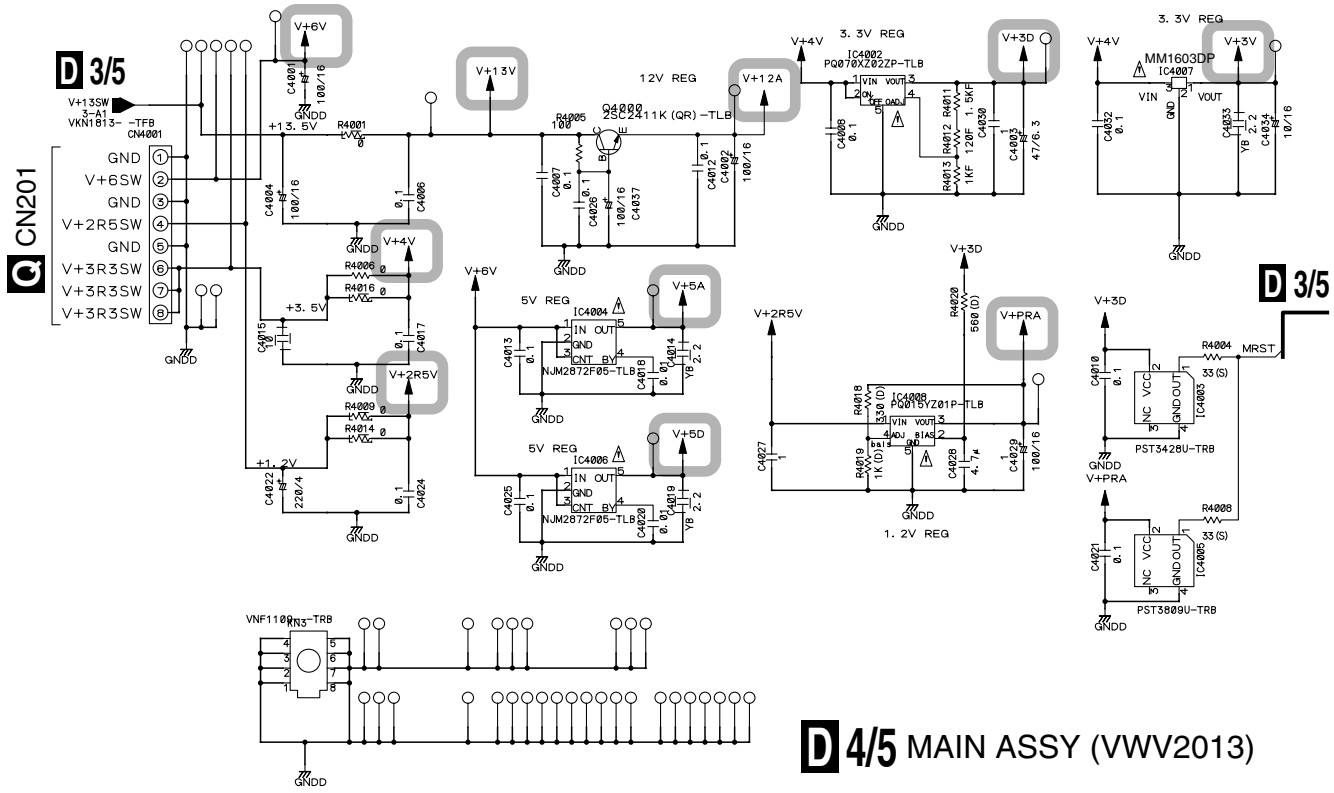
(D) ⇨: Audio Signal Route (DIGITAL)
⇨: Audio Signal Route (L ch)

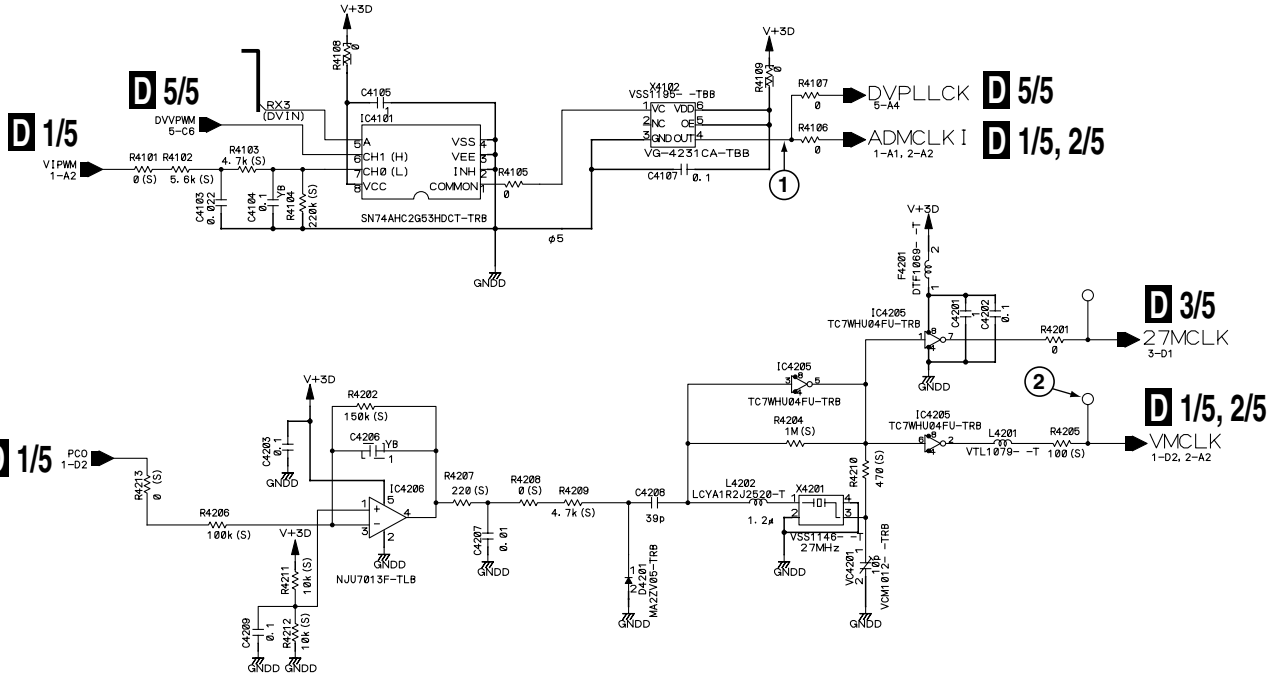


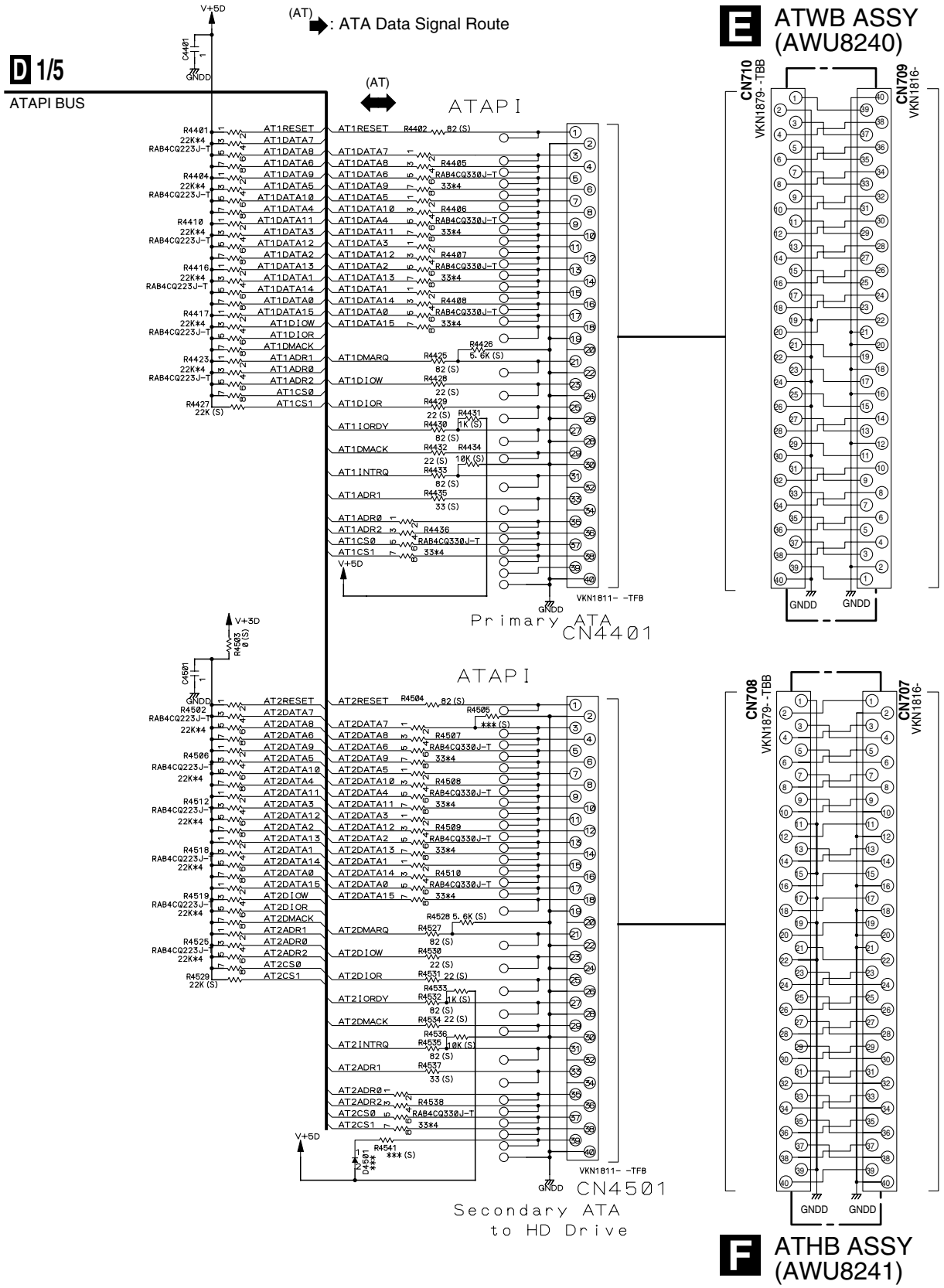




D 3/5

# 3.10 MAIN (4/5), ATWB and ATHB ASSYS



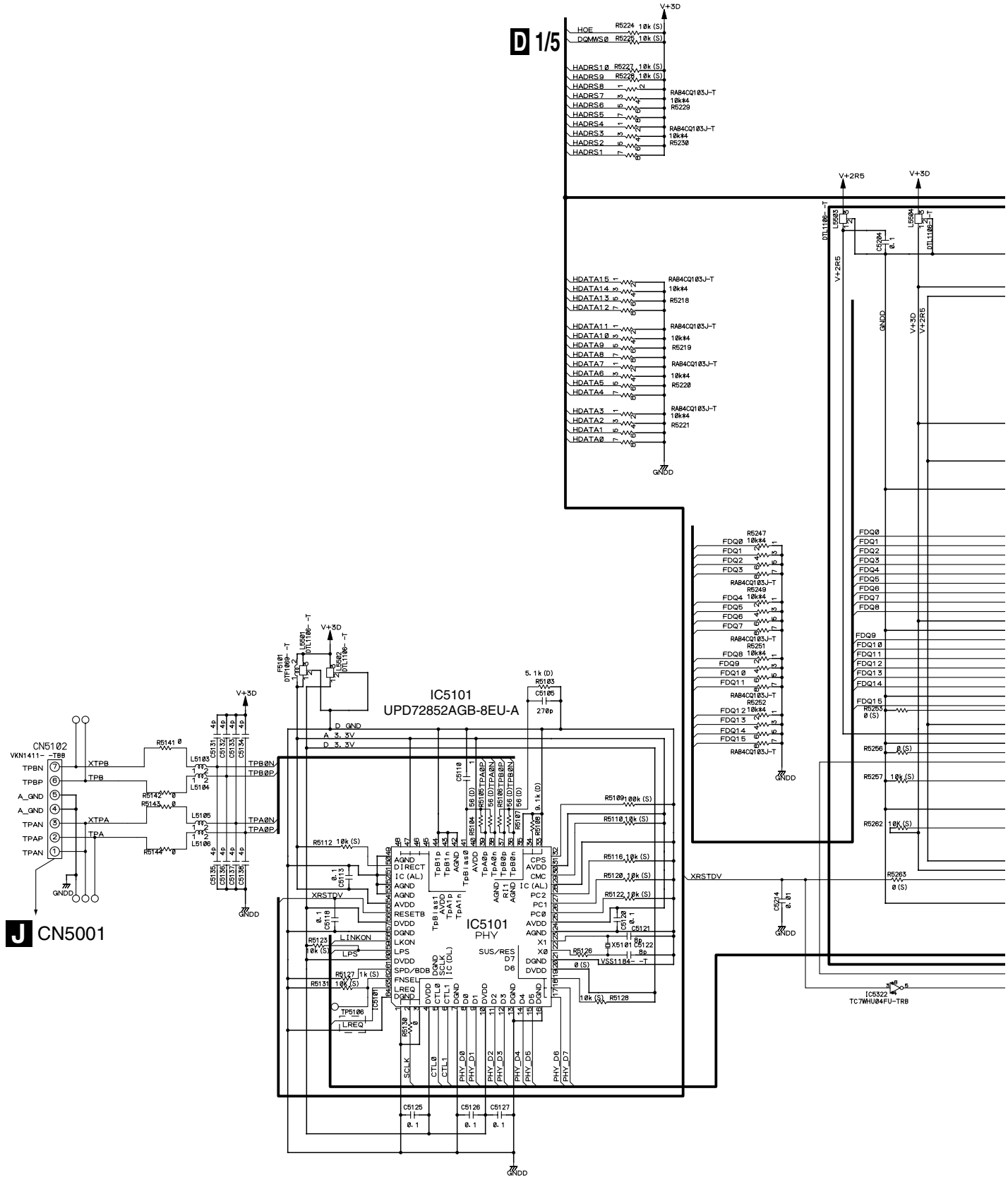




(AT) : ATA Data Signal Route
D 1/5
ATAPI BUS
ATAPI
Primary ATA
CN4401
ATAPI
Secondary ATA
to HD Drive
CN4501
E ATWB ASSY
(AWU8240)
F ATHB ASSY
(AWU8241)
CN710
VKN1879- -TBB
CN709
VKN1816-
To DRIVE ASSY R7
CN708
VKN1879- -TBB
CN707
VKN1816-
To HDD
VKN1811- -TFB
GNDD
V+5D

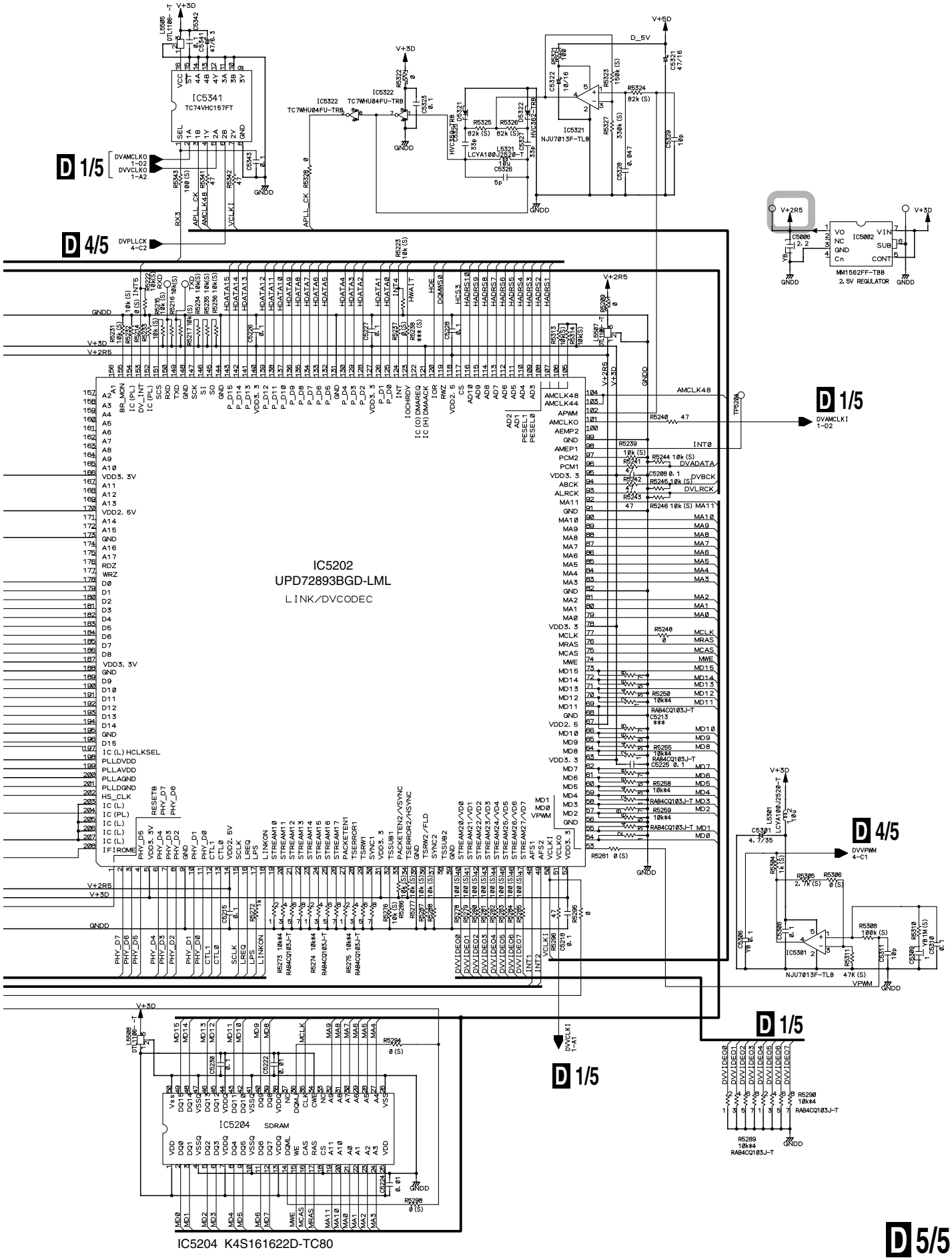
D 4/5 E F

# 3.11 MAIN ASSY (5/5)

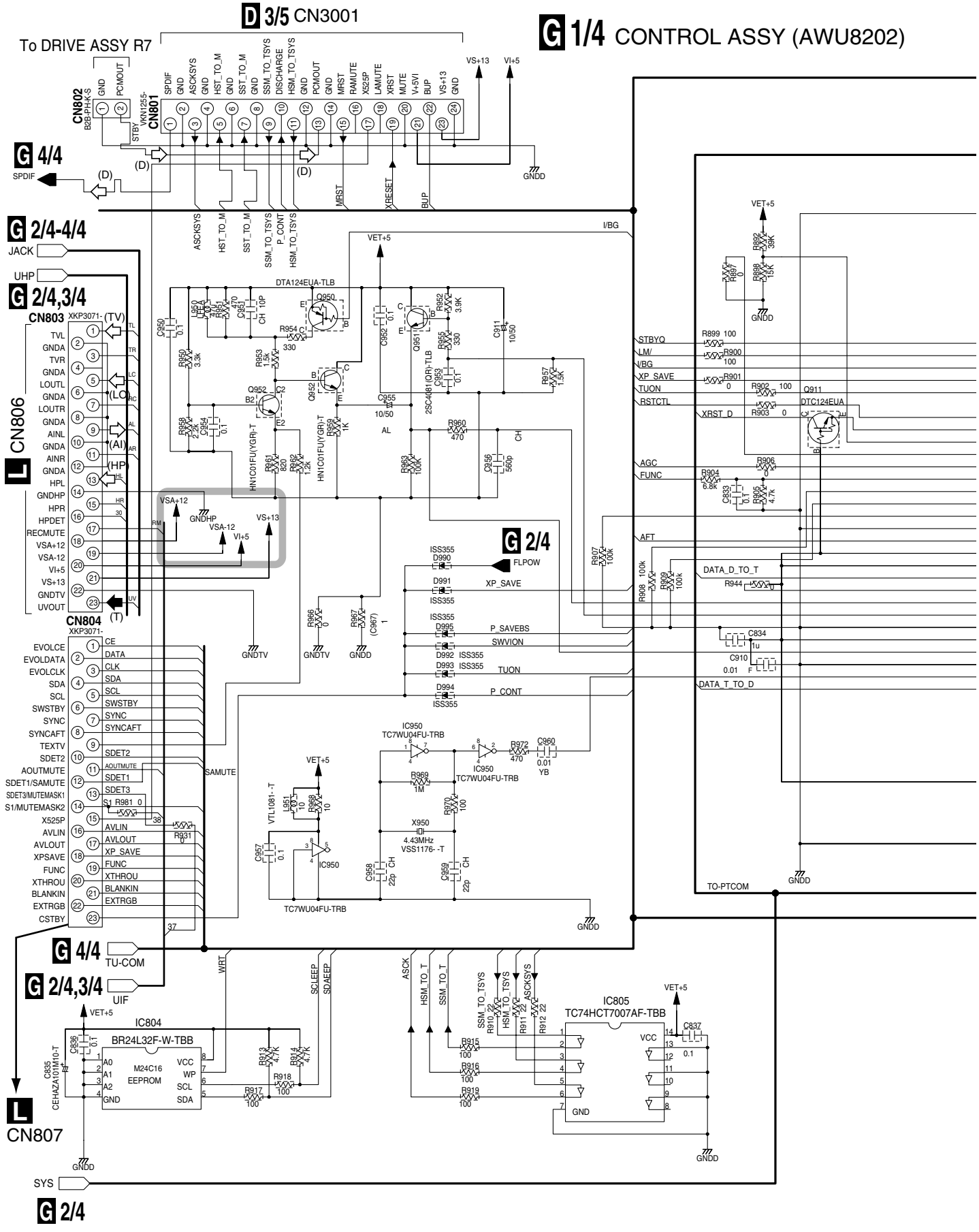
## D 5/5 MAIN ASSY (VWV2013)

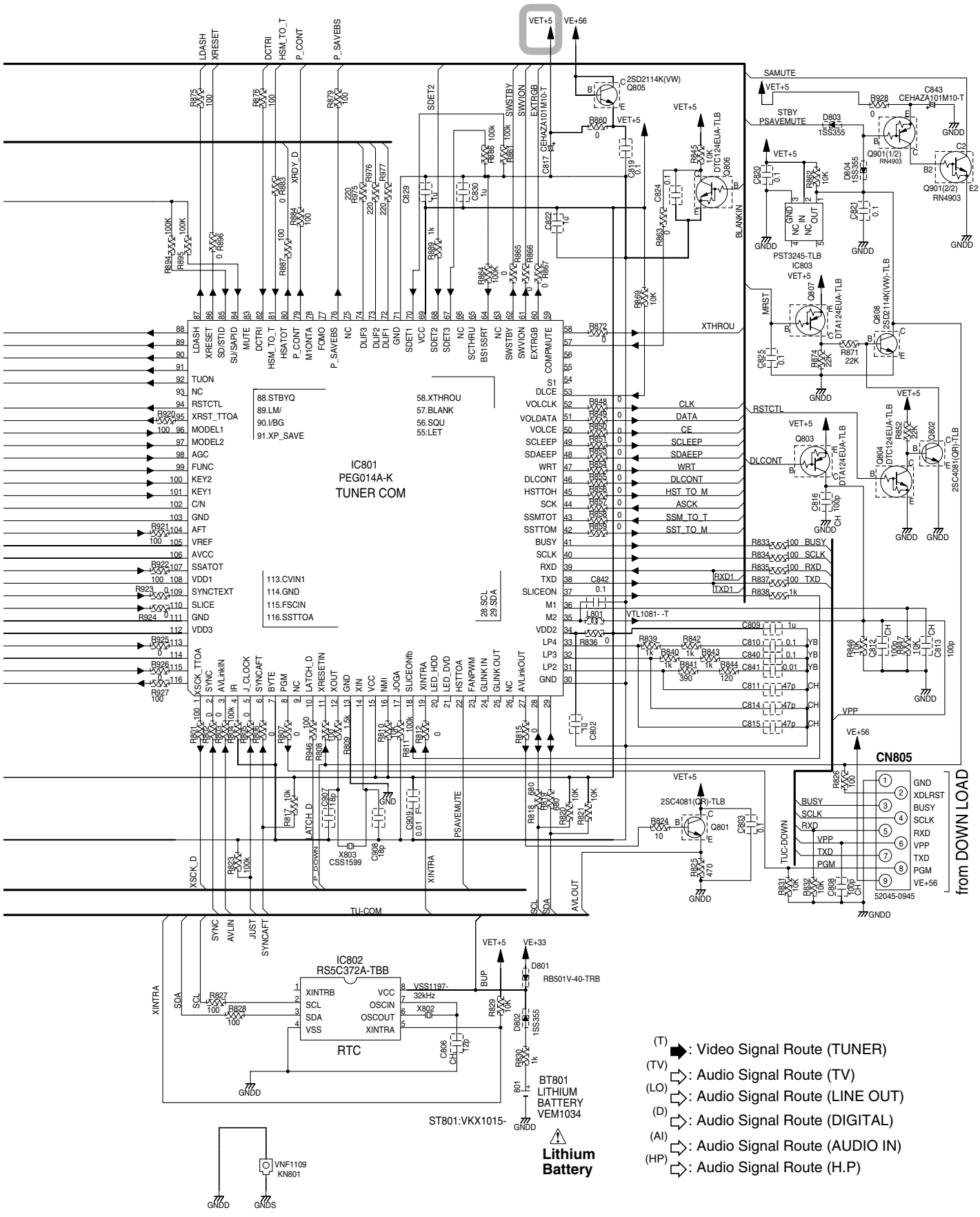



## D 5/5


IC5202
UPD72893BGD-LML
LINK/DVCODEC
IC5204 K4S161622D-TC80
IC5204 SDRAM
IC5341
TC74VHC157FT
IC5321
NJU7013F-TLB
IC5322
TC7WHU04FU-TRB
IC5002
MM1562FF-T88
2.5V REGULATOR
D 1/5
D 4/5
D 5/5
V+3D
V+5D
V+2R5
GNDD
DVAMCLKO 1-D2
DVVCLKO 1-A2
DVPLLCK 4-C2
DVAMCLKI 1-D2
DVVCLKI 1-A1
DVVPWM 4-C1
VPWM
APLL_CK
AMCLK48
VCLK1
RESETB
INT0
MCLK
MRAS
MCAS
MWE

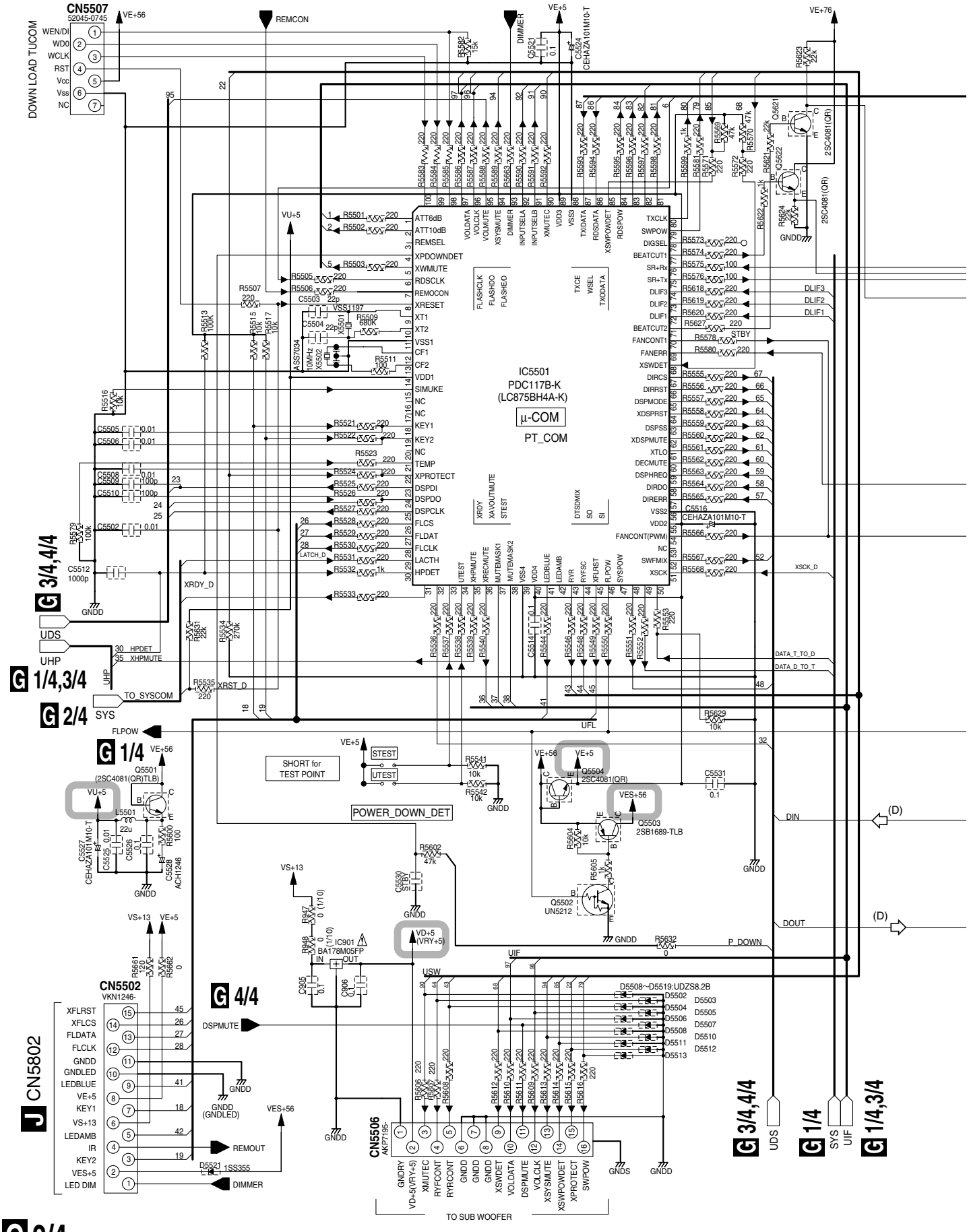
# 3.12 CONTROL ASSY (1/4)

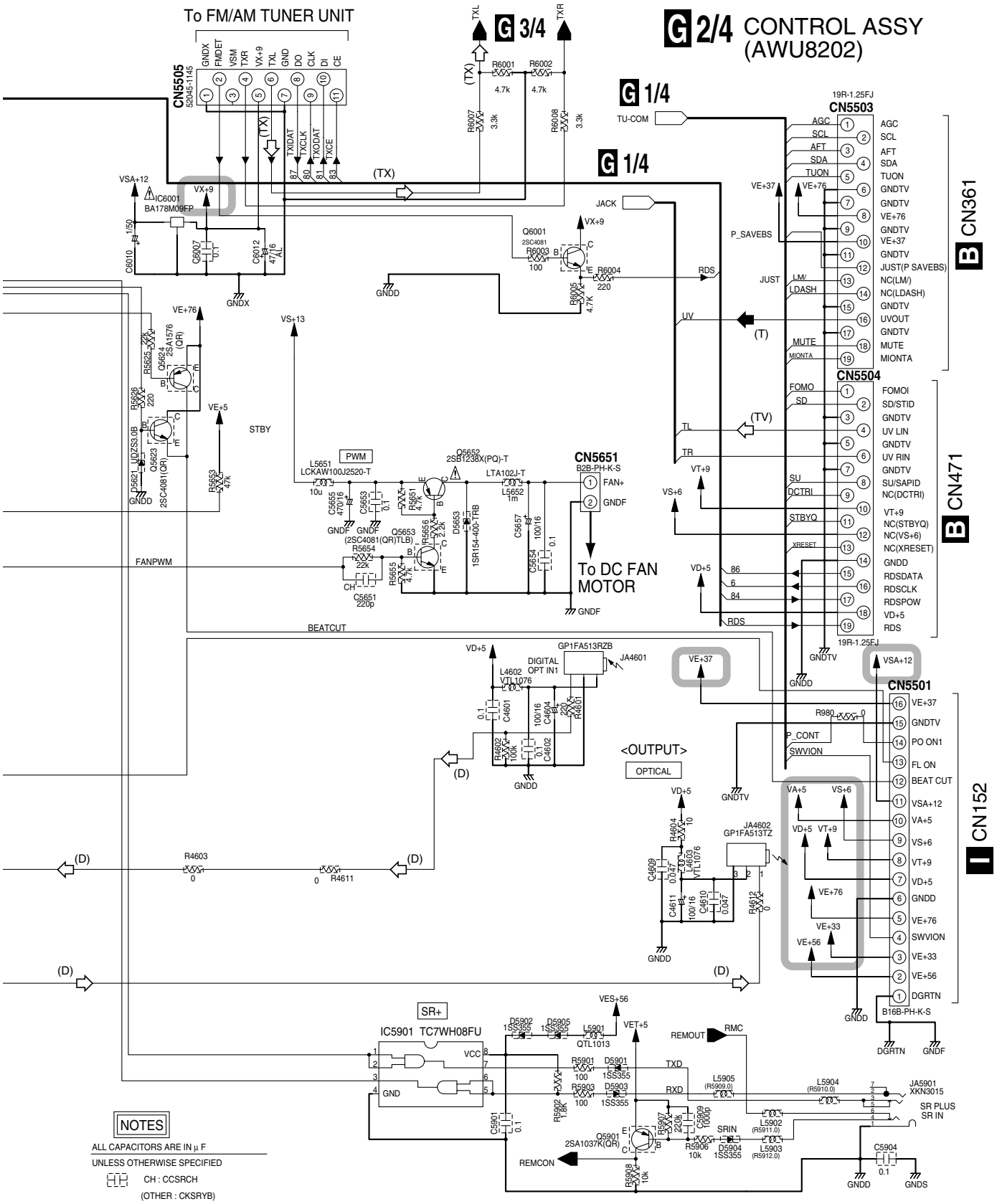



IC801
PEG014A-K
TUNER COM
IC802
RS5C372A-TBB
RTC
IC803
PST3245-TLB
CN805
from DOWN LOAD
52045-0945
BT801
LITHIUM
BATTERY
VEM1034
Lithium
Battery
ST801:VKX1015-
TU-COM
XV-DVR9H
(T): Video Signal Route (TUNER)
(TV): Audio Signal Route (TV)
(LO): Audio Signal Route (LINE OUT)
(D): Audio Signal Route (DIGITAL)
(AI): Audio Signal Route (AUDIO IN)
(HP): Audio Signal Route (H.P)

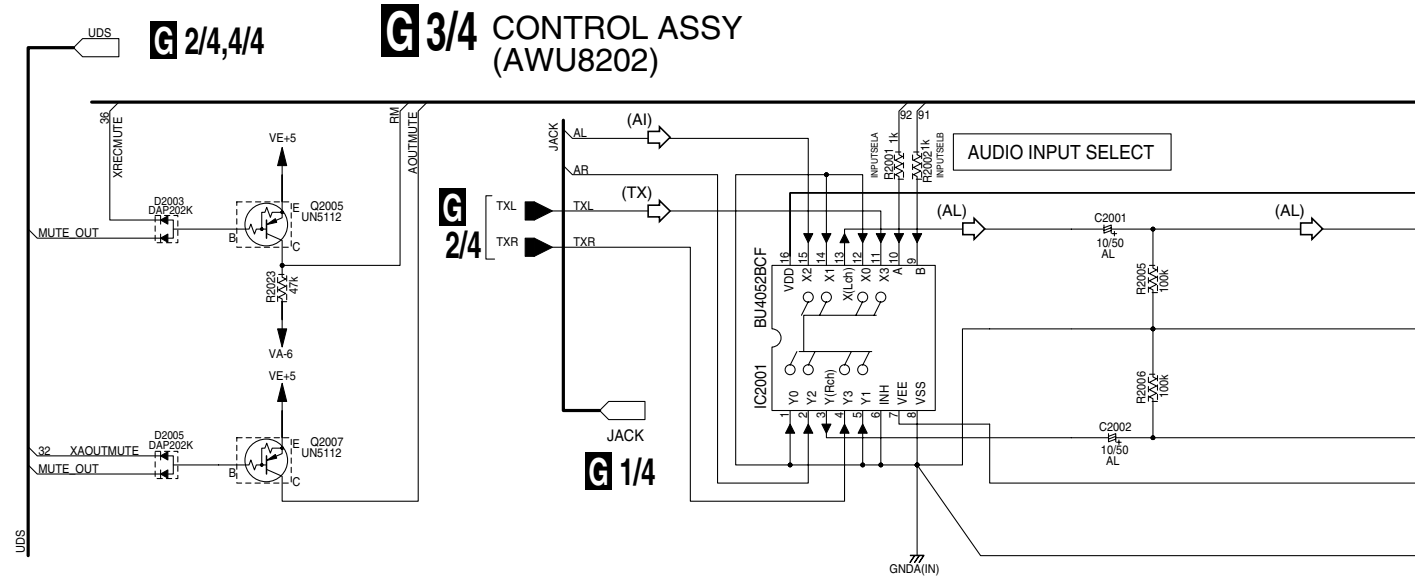
G 1/4

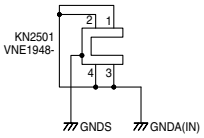
# 3.13 CONTROL ASSY (2/4)

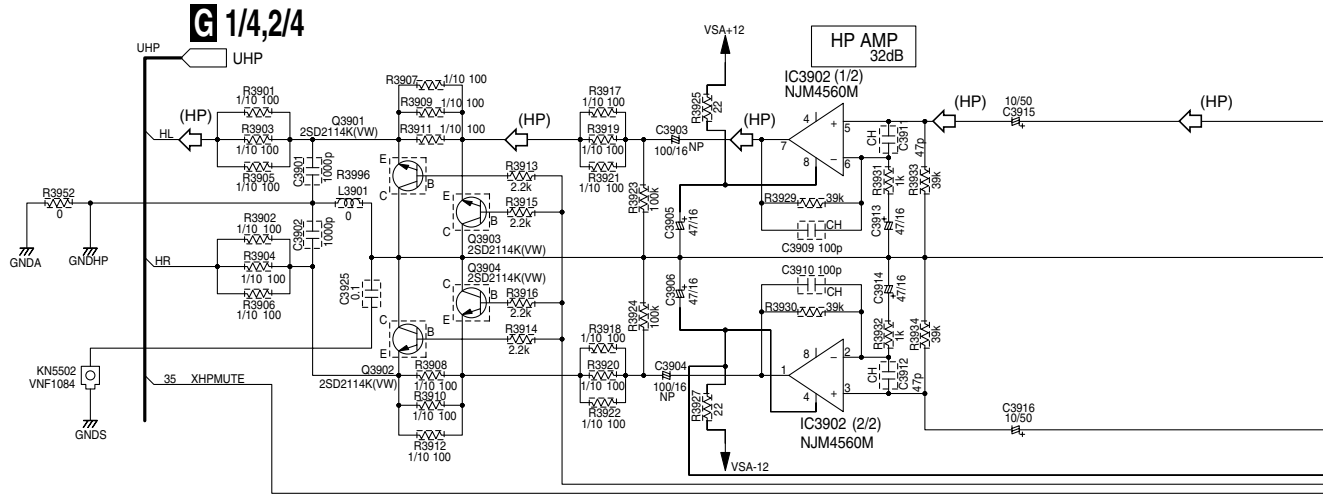



To FM/AM TUNER UNIT
CN5505
52045-1145
GNDX
FMDET
VSM
TXR
VX+9
TXL
GND
DO
CLK
DI
CE
TXIDAT
TXCLK
TXODAT
TXCE
G 3/4
G 2/4 CONTROL ASSY
(AWU8202)
G 1/4
TU-COM
19R-1.25FJ
CN5503
AGC
SCL
AFT
SDA
TUON
GNDTV
VE+76
VE+37
P_SAVEBS
JUST(P SAVEBS)
NC(LM/)
NC(LDASH)
UVOUT
MUTE
MIONTA
B CN361
CN5504
FOMOI
SD/STID
UV LIN
UV RIN
SU/SAPID
NC(DCTRI)
VT+9
NC(STBYQ)
NC(VS+6)
NC(XRESET)
RDSDATA
RDSCLK
RDSPOW
VD+5
RDS
B CN471
IC6001
BA178M09FP
VSA+12
VX+9
VE+5
VS+13
STBY
JACK
RDS
UV
MUTE
TL
TR
SU
DCTRI
STBYQ
XRESET
PWM
FANPWM
BEATCUT
CN5651
B2B-PH-K-S
FAN+
GNDF
To DC FAN
MOTOR
GP1FA513RZB
JA4601
DIGITAL
OPT IN1
<OUTPUT>
OPTICAL
JA4602
GP1FA513TZ
CN5501
B16B-PH-K-S
VE+37
GNDTV
P_CONT
SWVION
PO ON1
FL ON
BEAT CUT
VSA+12
VA+5
VS+6
VT+9
VD+5
GNDD
VE+76
VE+33
VE+56
DGRTN
I CN152
SR+
IC5901 TC7WH08FU
VES+56
VET+5
REMOUT
RMC
TXD
RXD
SRIN
SR PLUS
SR IN
JA5901
XKN3015
REMCON
GNDS
NOTES
ALL CAPACITORS ARE IN μ F
UNLESS OTHERWISE SPECIFIED
CH : CCSRCH
(OTHER : CKSRYB)
AL : CEAL
(OTHER : CEAT)
ALL RESISTORS ARE IN Ω
RS1/16S***J
RS1/10S***J
(1/10)
ALL INDUCTORS ARE IN μ H
LFEA***J
(T) : Video Signal Route (TUNER)
(D) : Audio Signal Route (DIGITAL)
(TX) : Audio Signal Route (FM/AM)
(TV) : Audio Signal Route (TV)
G 2/4

# 3.14 CONTROL ASSY (3/4)




NOTES

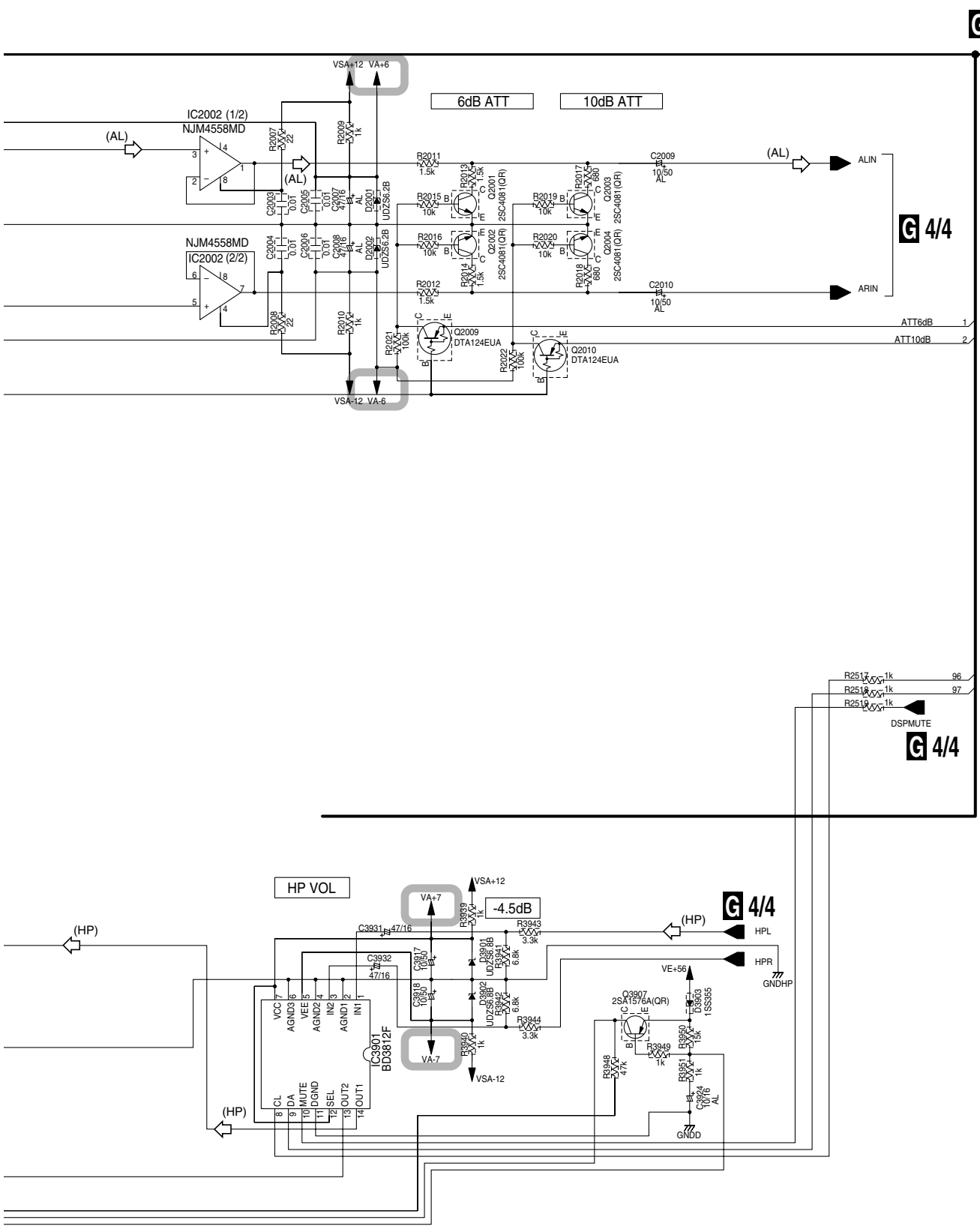
ALL CAPACITORS ARE IN μ F
UNLESS OTHERWISE SPECIFIED

CH : CCSRCH
(OTHER : CKSRYB)
AL : CEAL
NP : CEANP
(OTHER : CEAT)

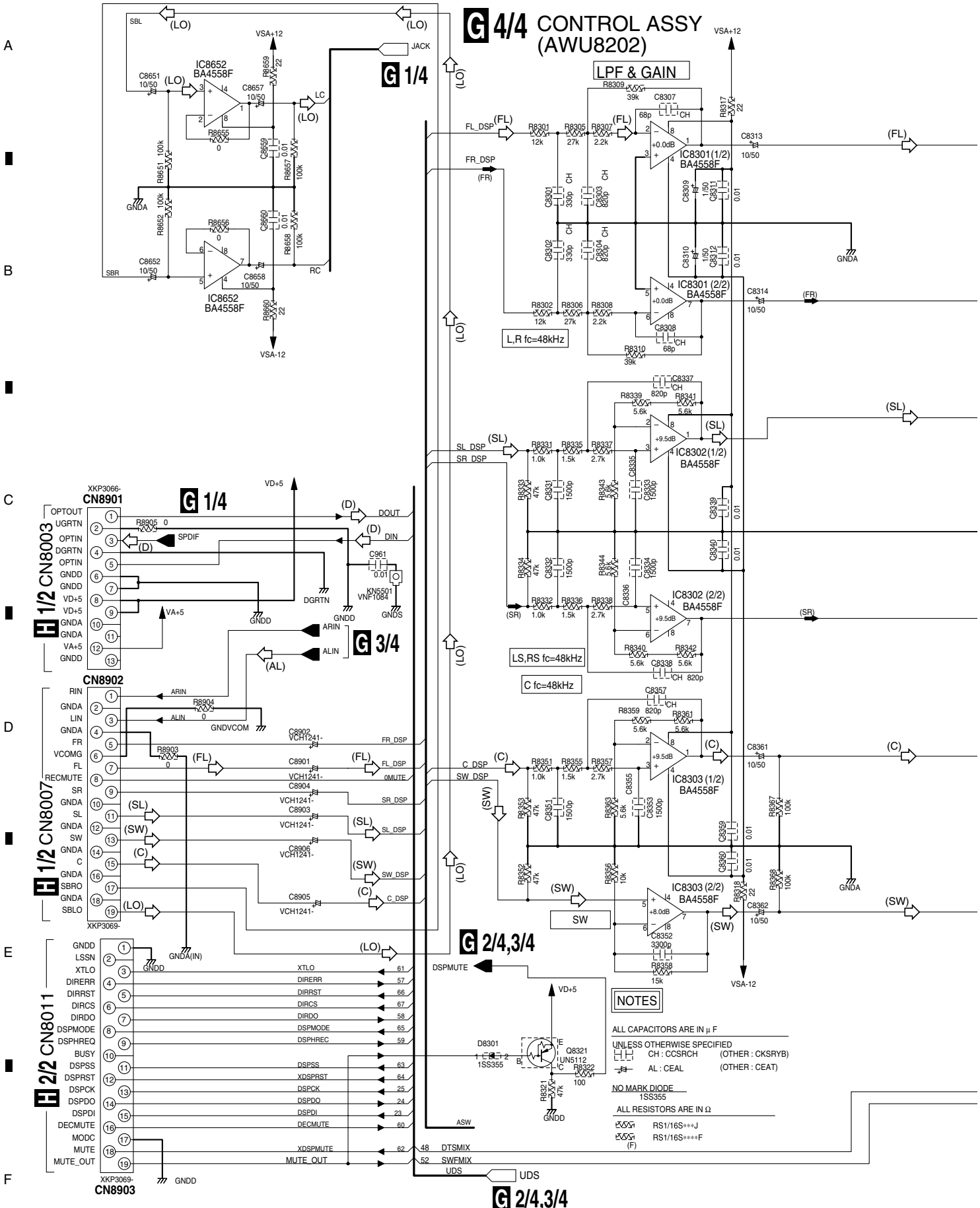
ALL RESISTORS ARE IN Ω

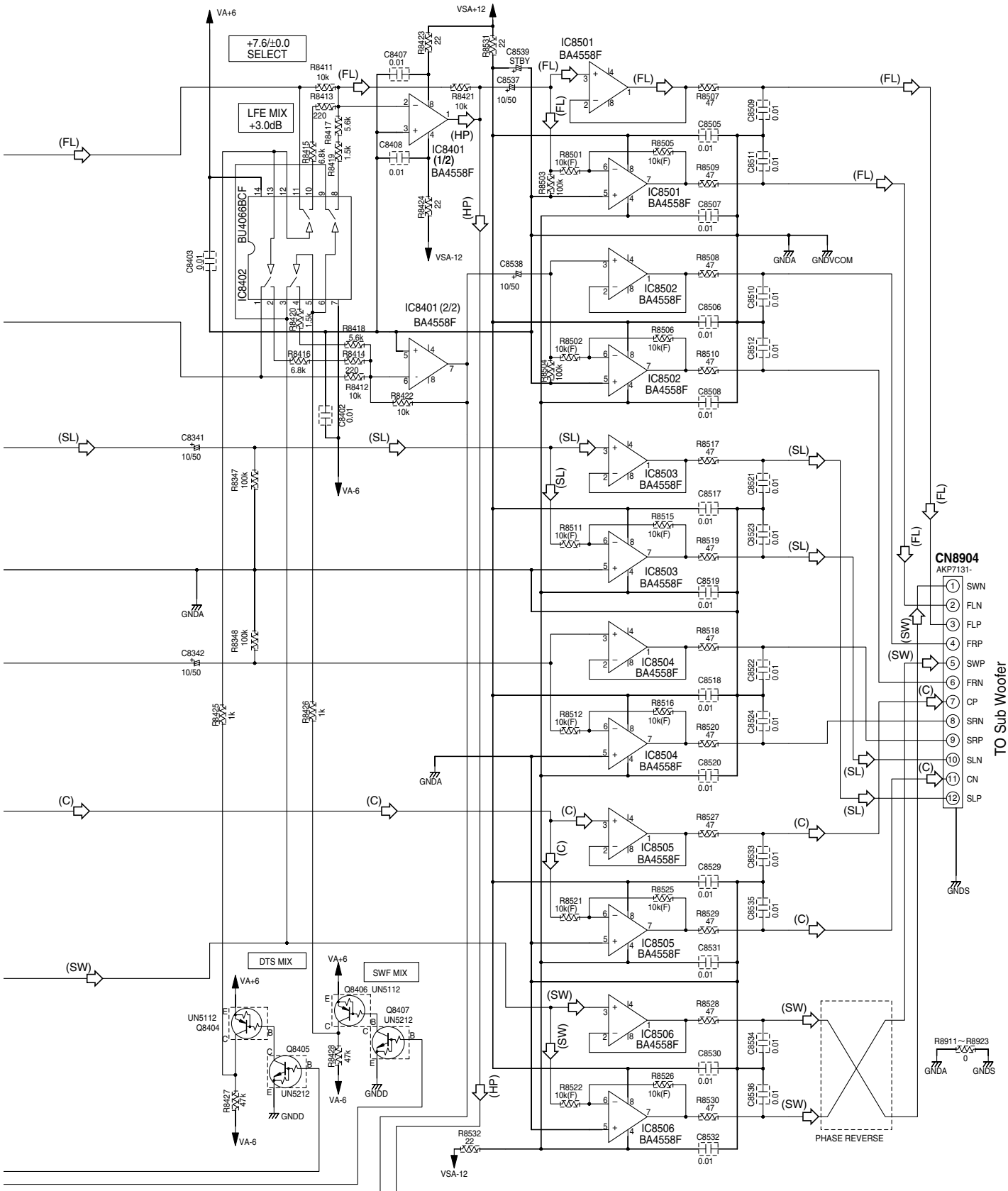
RS1/16S***J
RS1/10S***J
1/10

G 3/4


G 1/4,2/4
UIF
VSA+12 VA+6
6dB ATT
10dB ATT
IC2002 (1/2)
NJM4558MD
(AL)
R2007 22
R2009 1k
R2011 1.5k
R2013 1.5k
Q2001 2SC4081(QR)
R2015 10k
R2017 680
Q2003 2SC4081(QR)
C2009 10/50 AL
ALIN
G 4/4
C2003 0.01
C2005 0.01
C2007 47/16 AL
D2001 UDZS6.2B
IC2002 (2/2)
NJM4558MD
C2004 0.01
C2006 0.01
C2008 47/16 AL
D2002 UDZS6.2B
R2016 10k
R2014 1.5k
Q2002 2SC4081(QR)
R2019 10k
R2018 680
Q2004 2SC4081(QR)
R2012 1.5k
C2010 10/50 AL
ARIN
R2008 22
R2010 1k
R2021 100k
Q2009 DTA124EUA
R2022 100k
Q2010 DTA124EUA
ATT6dB 1
ATT10dB 2
VSA-12 VA-6
R2517 1k 96
R2518 1k 97
R2519 1k
DSPMUTE
G 4/4
HP VOL
VSA+12
VA+7
-4.5dB
R3939 1k
R3943 3.3k
C3931 47/16
C3932 47/16
C3917 10/50
C3918 10/50
D3901 UDZS6.8B
D3902 UDZS6.8B
R3941 2.2k 6.8k
R3942 2.2k 6.8k
R3944 3.3k
R3940 1k
VA-7
VSA-12
IC3901 BD3812F
VCC AGND3 VEE AGND2 IN2 AGND1 IN1
CL DA MUTE DGND SEL OUT2 OUT1
(HP)
HPL
HPR
GNDHP
VE+56
Q3907 2SA1576A(QR)
D3903 1SS355
R3949 1k
R3950 15k
R3948 47k
R3951 1k
C3924 10/16 AL
GNDD
G 4/4
(AL): Audio Signal Route (AUDIO L ch)
(TX): Audio Signal Route (FM/AM)
(AI): Audio Signal Route (AUDIO IN)
(HP): Audio Signal Route (H.P)
G 3/4

# 3.15 CONTROL ASSY (4/4)



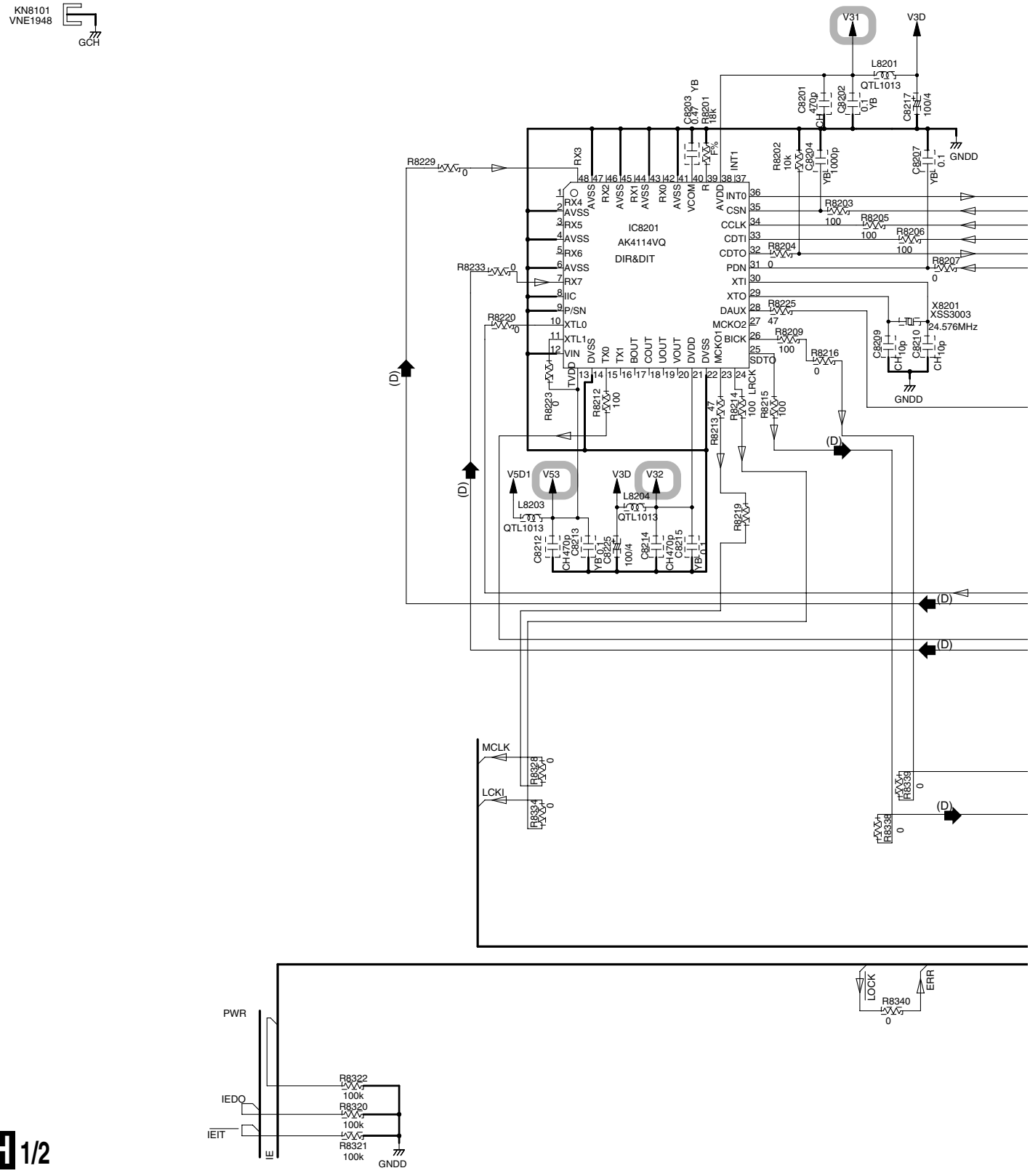

+7.6/±0.0 SELECT
LFE MIX +3.0dB
IC8401 (1/2) BA4558F
IC8401 (2/2) BA4558F
BU4066BCF
IC8402
IC8501 BA4558F
IC8502 BA4558F
IC8503 BA4558F
IC8504 BA4558F
IC8505 BA4558F
IC8506 BA4558F
DTS MIX
SWF MIX
Q8406 UN5112
Q8407 UN5212
Q8404 UN5112
Q8405 UN5212
PHASE REVERSE
CN8904 AKP7131-
SWN
FLN
FLP
FRP
SWP
FRN
CP
SRN
SRP
SLN
CN
SLP
TO Sub Woofer
GNDA
GNDVCOM
GNDS
GNDD
VA+6
VA-6
VSA+12
VSA-12
R8911～R8923
(AL): Audio Signal Route (AUDIO L ch)
(HP): Audio Signal Route (H.P)
(D): Audio Signal Route (DIGITAL)
(FL): Audio Signal Route (FL ch)
(SL): Audio Signal Route (SL ch)
(C): Audio Signal Route (C ch)
(SW): Audio Signal Route (SW ch)
(LO): Audio Signal Route (LINE OUT)

G 3/4

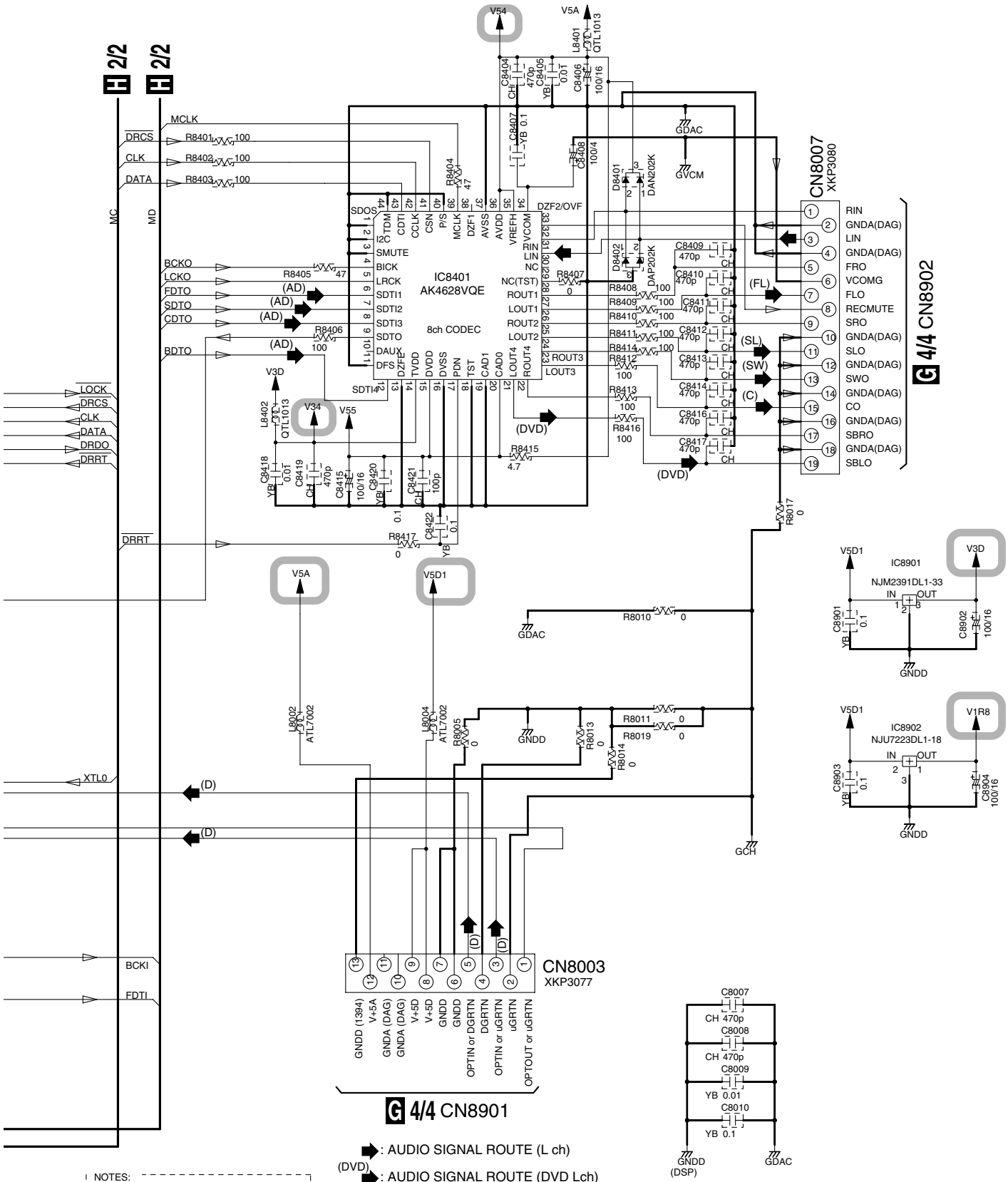
G 4/4

# 3.16 DSP ASSY (1/2)

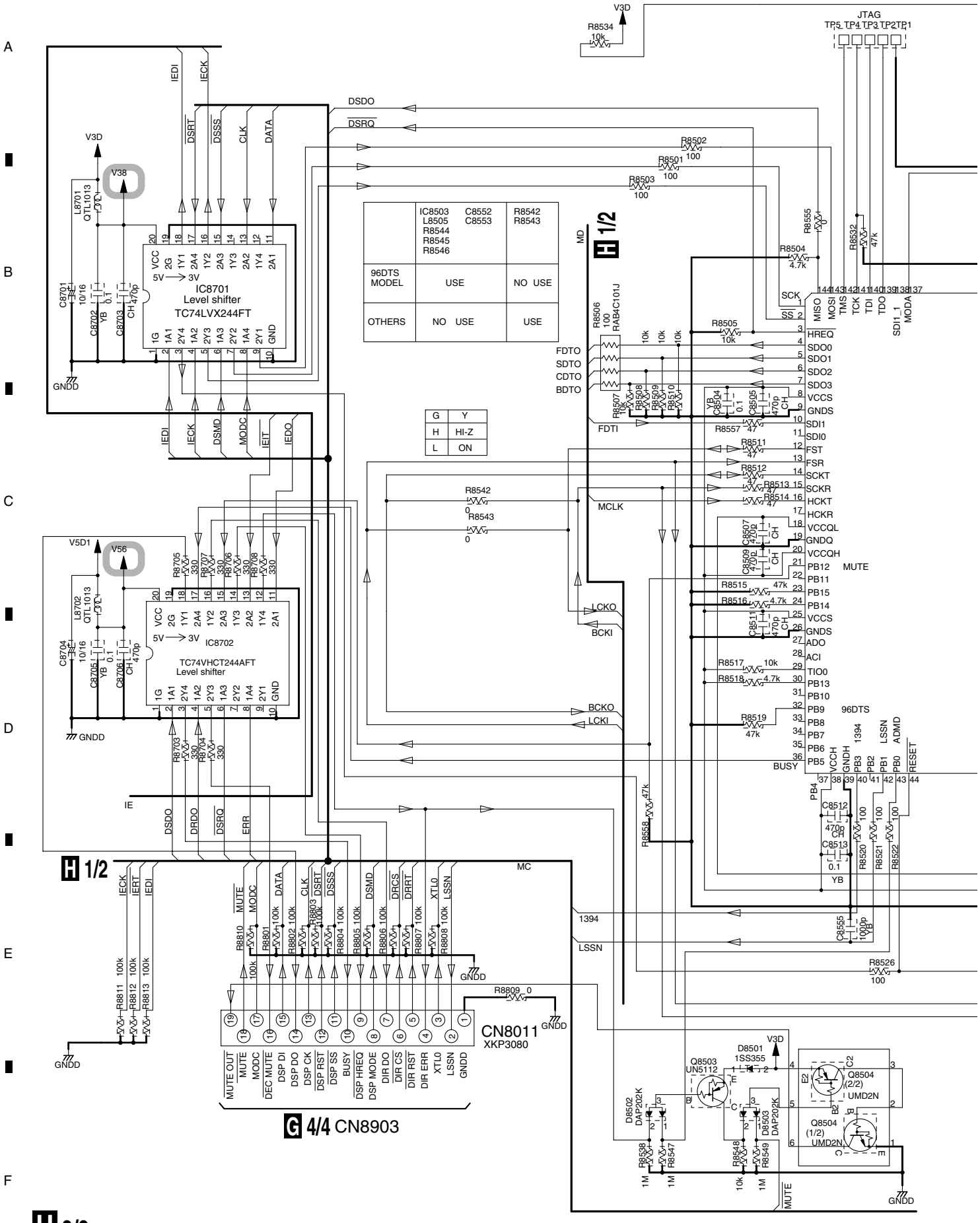
**H 1/2** DSP ASSY
(AWX8486)



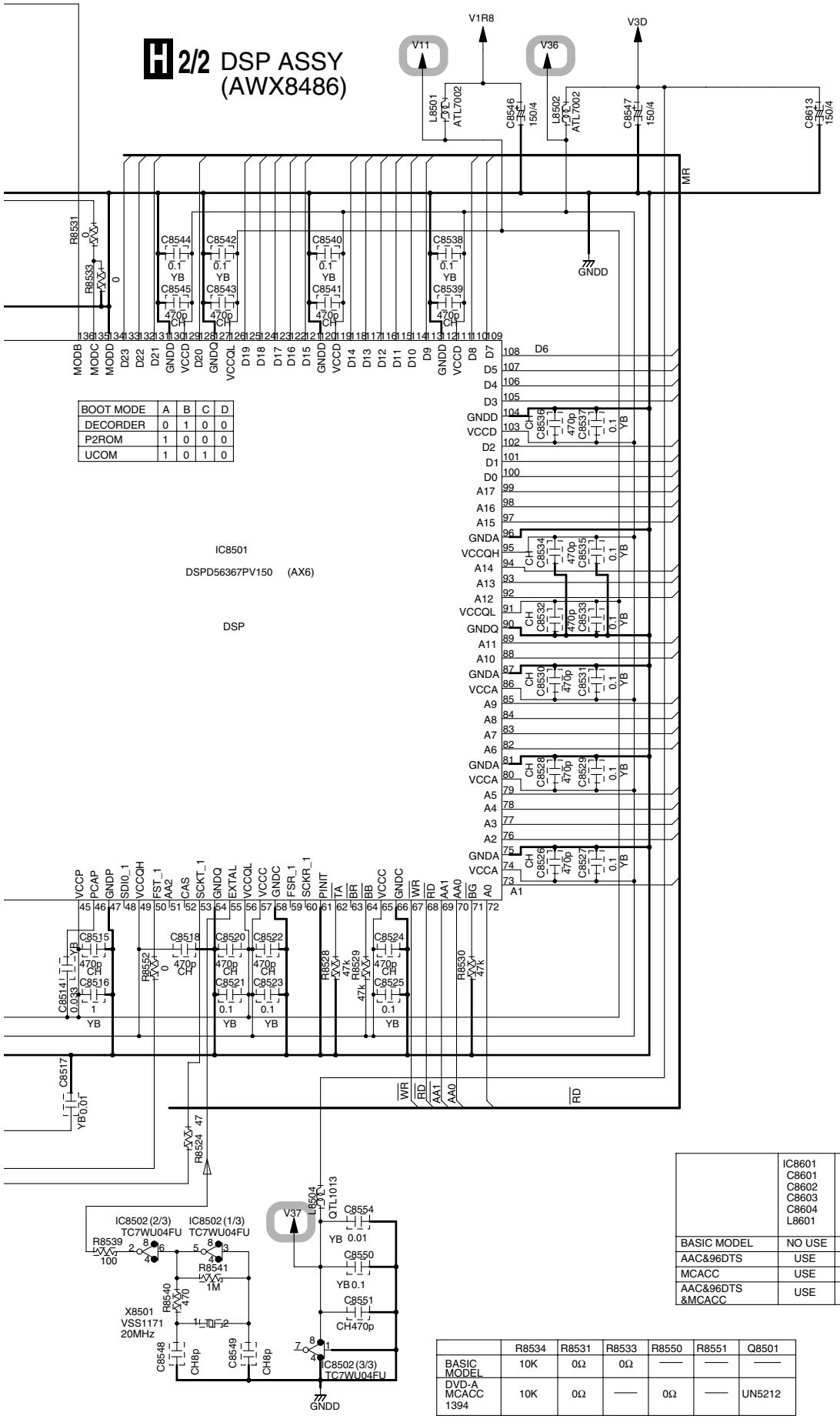

**H 1/2**


H 2/2
H 2/2
IC8401
AK4628VQE
8ch CODEC
CN8007
XKP3080
G 4/4 CN8902
CN8003
XKP3077
G 4/4 CN8901
IC8901
NJM2391DL1-33
IC8902
NJU7223DL1-18
MCLK
DRCS
CLK
DATA
BCKO
LCKO
FDTO
SDTO
CDTO
BDTO
LOCK
DRDO
DRRT
XTL0
BCKI
FDTI
V54
V5A
V3D
V34
V55
V5D1
V1R8
GDAC
GVCM
GNDD
GCH
(AD)
(DVD)
(FL)
(SL)
(SW)
(C)
(D)
RIN
LIN
NC
NC(TST)
ROUT1
LOUT1
ROUT2
LOUT2
ROUT3
LOUT3
SDTI1
SDTI2
SDTI3
SDTO
DAUX
DFS
SMUTE
BICK
LRCK
I2C
P/S
DZF2/OVF
RIN
GNDA(DAG)
LIN
FRO
VCOMG
FLO
RECMUTE
SRO
SLO
SWO
CO
SBRO
SBLO
GNDD (1394)
V+5A
GNDA (DAG)
V+5D
GNDD
OPTIN or DGRTN
DGRTN
OPTIN or uGRTN
uGRTN
OPTOUT or uGRTN
C8007
CH 470p
C8008
CH 470p
C8009
YB 0.01
C8010
YB 0.1
GNDD (DSP)
: AUDIO SIGNAL ROUTE (L ch)
: AUDIO SIGNAL ROUTE (DVD Lch)
: AUDIO SIGNAL ROUTE (DIGITAL)
: AUDIO DATA SIGNAL ROUTE
: AUDIO SIGNAL ROUTE (Front L ch)
: AUDIO SIGNAL ROUTE (Surround L ch)
: AUDIO SIGNAL ROUTE (Center ch)
: AUDIO SIGNAL ROUTE (Sub Woofer ch)
NOTES:
NO INDICATED PARTS IS...
CCSRCH****50-T
CKSRYB****50-T
CKSRYB333K16-T
CKSRYB104K16-T
CKSRYB105K6R3-T
CEV***M**-T
RS1/16S***J-T
UNLESS OTHERWISE NOTED
H 1/2

# 3.17 DSP ASSY (2/2)



# H 2/2 DSP ASSY (AWX8486)

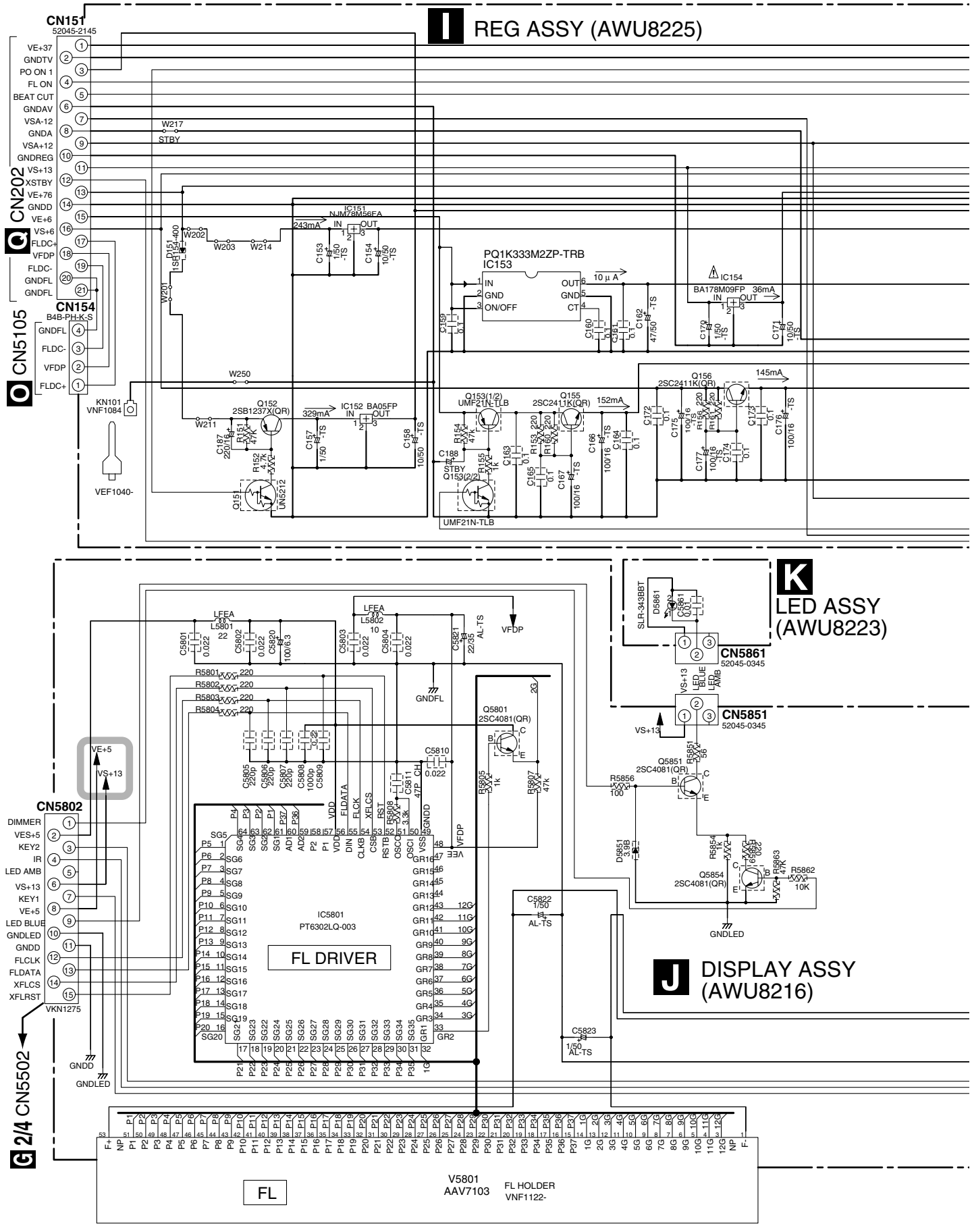


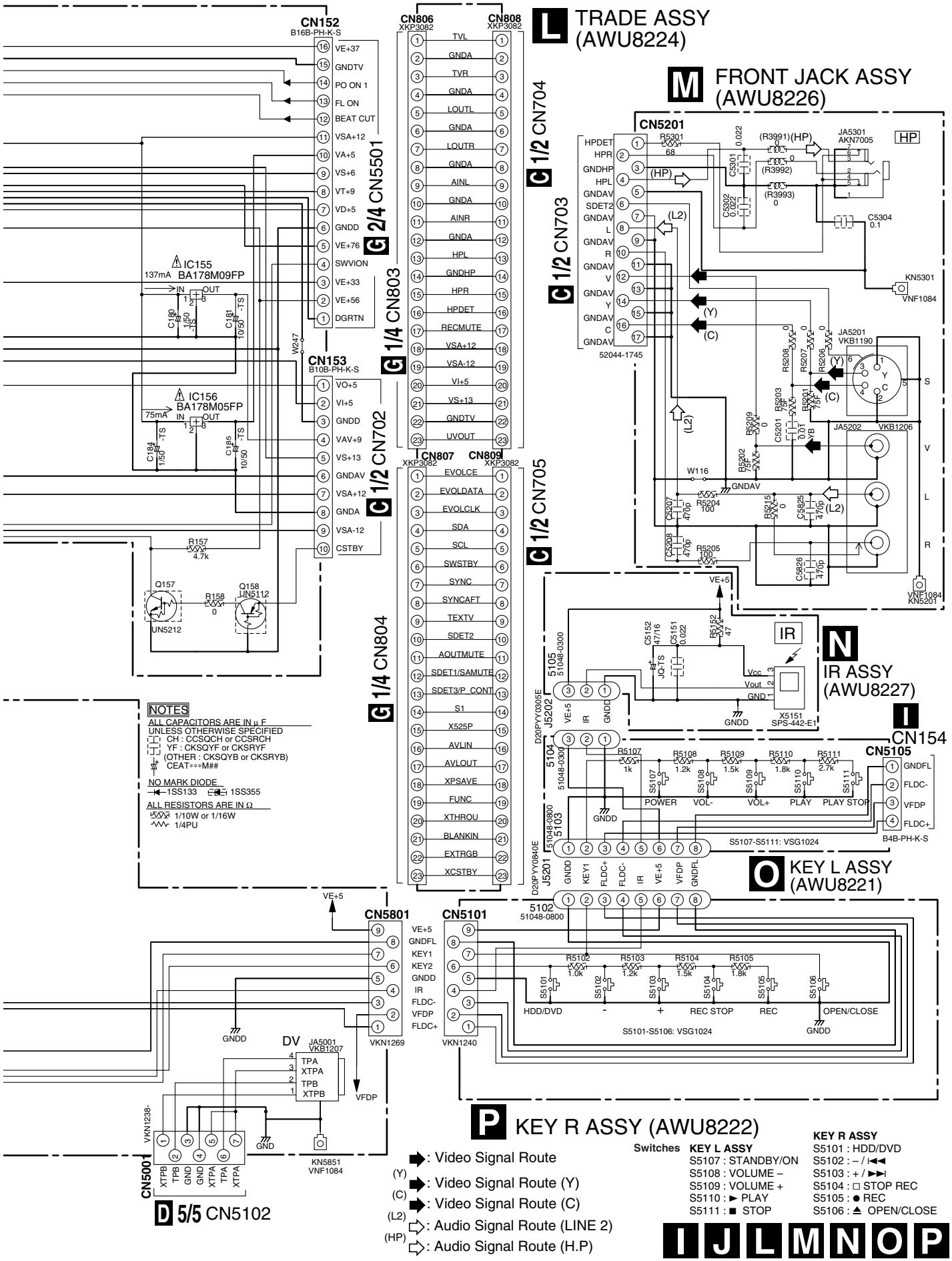

| BOOT MODE | A | B | C | D |
|---|---|---|---|---|
| DECORDER | 0 | 1 | 0 | 0 |
| P2ROM | 1 | 0 | 0 | 0 |
| UCOM | 1 | 0 | 1 | 0 |

| | IC8601 C8601 C8602 C8603 C8604 L8601 | IC8602 C8605 C8606 C8607 C8608 L8602 | IC8603 C8609 C8610 L8603 | R8523 |
|---|---|---|---|---|
| BASIC MODEL | NO USE | NO USE | NO USE | NO USE |
| AAC&96DTS | USE | USE | NO USE | USE |
| MCACC | USE | NO USE | USE | USE |
| AAC&96DTS &MCACC | USE | USE | USE | USE |

| | R8534 | R8531 | R8533 | R8550 | R8551 | Q8501 |
|---|---|---|---|---|---|---|
| BASIC MODEL | 10K | 0Ω | 0Ω | —— | —— | —— |
| DVD-A MCACC 1394 | 10K | 0Ω | —— | 0Ω | —— | UN5212 |

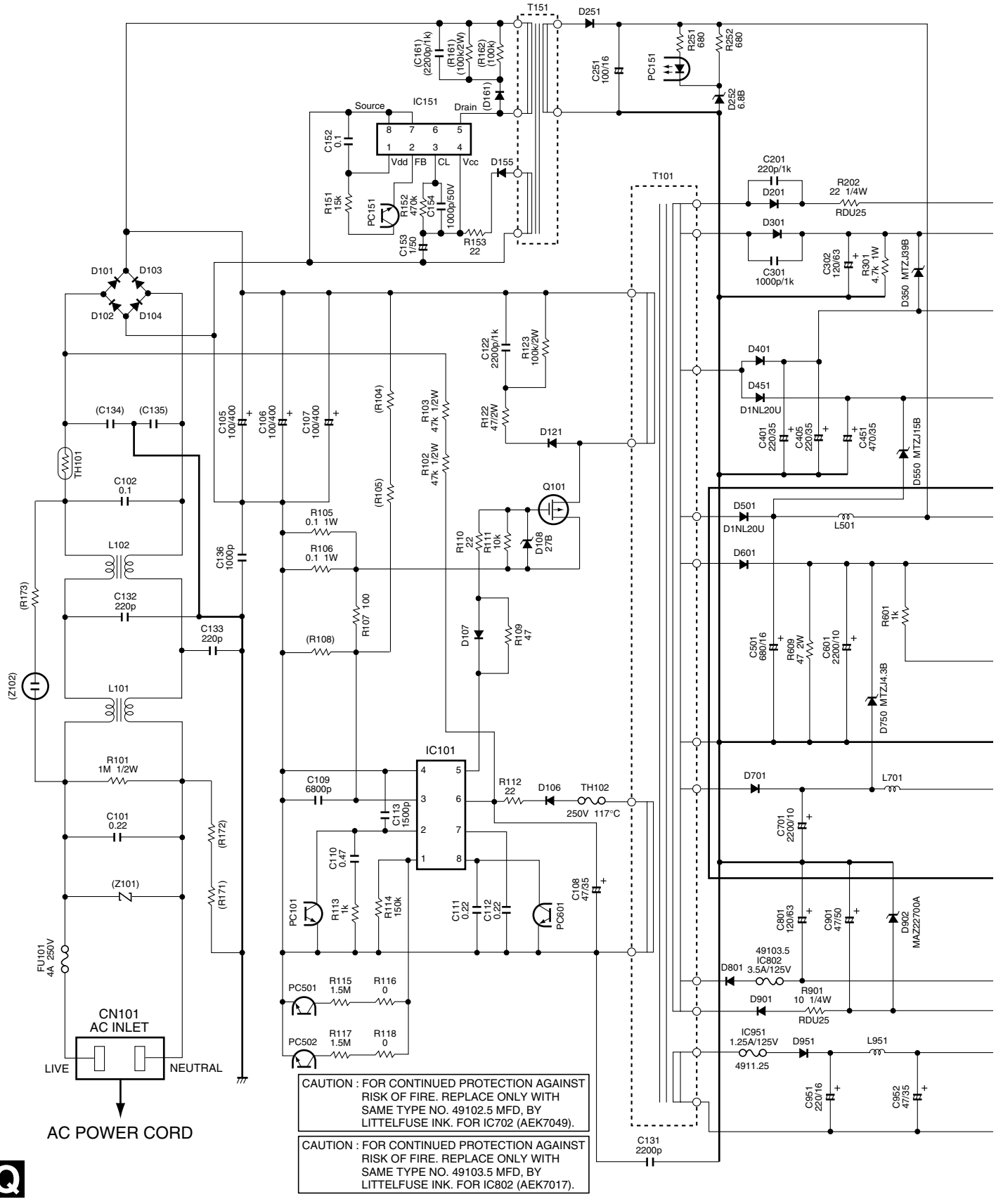
# 3.18 REG, DISPLAY, LED, TRADE, F. JACK, IR, KEY L and KEY R ASSYS




L TRADE ASSY (AWU8224)
M FRONT JACK ASSY (AWU8226)
N IR ASSY (AWU8227)
O KEY L ASSY (AWU8221)
P KEY R ASSY (AWU8222)
CN152
CN153
CN806
CN807
CN808
CN809
CN5201
CN5801
CN5101
CN5001
CN5105
G 2/4 CN5501
G 1/4 CN803
G 1/2 CN702
G 1/4 CN804
C 1/2 CN704
C 1/2 CN703
C 1/2 CN705
D 5/5 CN5102
I CN154
IC155 BA178M09FP
IC156 BA178M05FP
Q157 UN5212
Q158 UN5112
JA5301 AKN7005
JA5201 VKB1190
JA5202 VKB1206
JA5001 VKB1207
KN5301 VNF1084
KN5201 VNF1084
KN5851 VNF1084
VKN1269
VKN1240
VKN1238-
X5151 SPS-442-E1
52044-1745
B16B-PH-K-S
B10B-PH-K-S
XKP3082
B4B-PH-K-S
D20PYY0305E
D20PYY0840E
5102 51048-0800
5103 51048-0800
5104 51048-0300
5105 51048-0300
S5107-S5111: VSG1024
S5101-S5106: VSG1024
POWER
VOL-
VOL+
PLAY
PLAY STOP
HDD/DVD
REC STOP
REC
OPEN/CLOSE
NOTES
ALL CAPACITORS ARE IN μ F
UNLESS OTHERWISE SPECIFIED
CH : CCSQCH or CCSRCH
YF : CKSQYF or CKSRYF
(OTHER : CKSQYB or CKSRYB)
CEAT***M##
NO MARK DIODE
1SS133 1SS355
ALL RESISTORS ARE IN Ω
1/10W or 1/16W
1/4PU
: Video Signal Route
(Y) : Video Signal Route (Y)
(C) : Video Signal Route (C)
(L2) : Audio Signal Route (LINE 2)
(HP) : Audio Signal Route (H.P)
Switches
KEY L ASSY
S5107 : STANDBY/ON
S5108 : VOLUME –
S5109 : VOLUME +
S5110 : ► PLAY
S5111 : ■ STOP
KEY R ASSY
S5101 : HDD/DVD
S5102 : – / |◄◄
S5103 : + / ►►|
S5104 : □ STOP REC
S5105 : ● REC
S5106 : ▲ OPEN/CLOSE
I J L M N O P

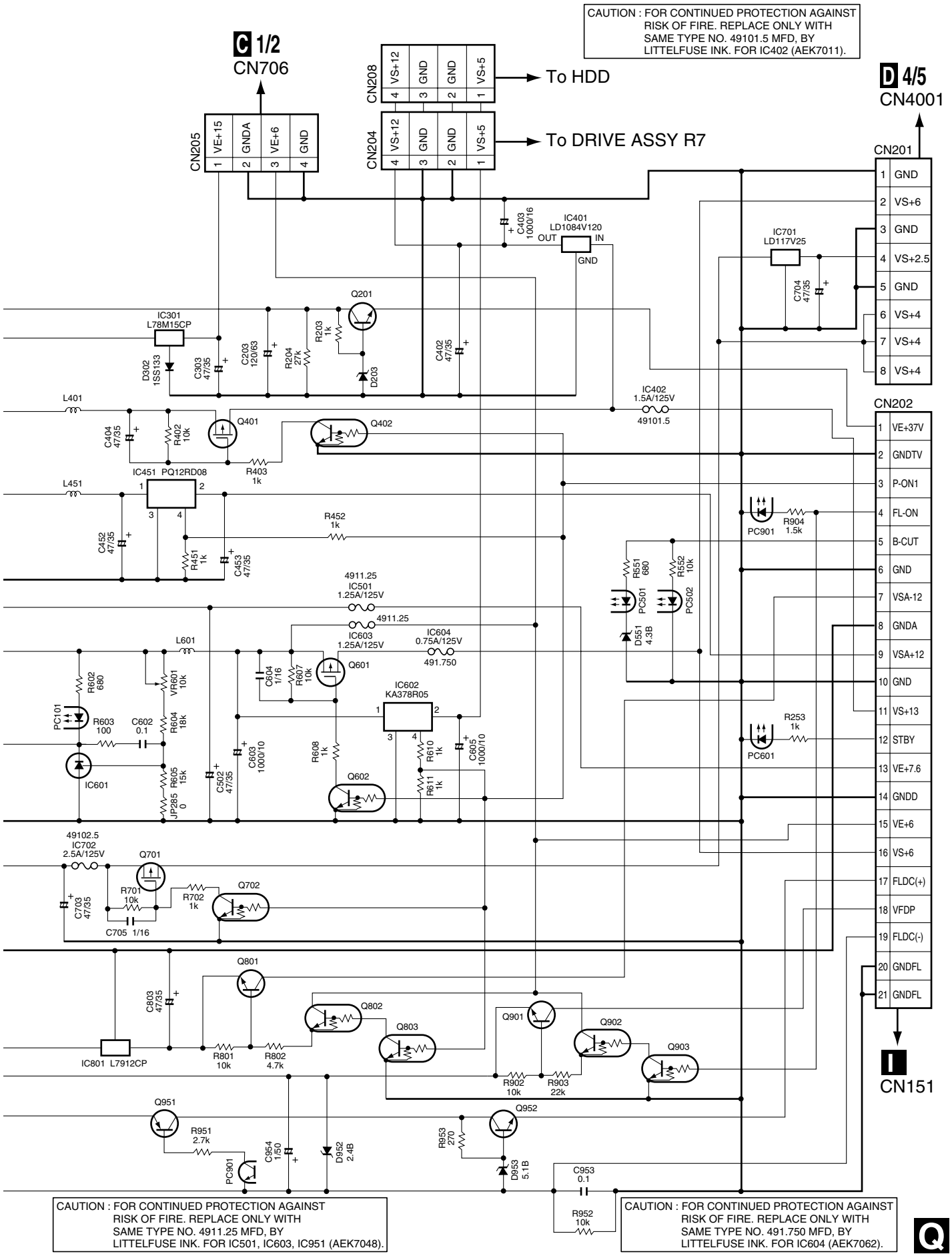
# 3.19 POWER SUPPLY UNIT

## Q POWER SUPPLY UNIT (AWR7013)




CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49102.5 MFD, BY LITTELFUSE INK. FOR IC702 (AEK7049).

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49103.5 MFD, BY LITTELFUSE INK. FOR IC802 (AEK7017).


CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.5 MFD, BY LITTELFUSE INK. FOR IC402 (AEK7011).
C 1/2
CN706
CN205
VE+15
GNDA
VE+6
GND
CN208
VS+12
GND
GND
VS+5
To HDD
CN204
VS+12
GND
GND
VS+5
To DRIVE ASSY R7
D 4/5
CN4001
CN201
GND
VS+6
GND
VS+2.5
GND
VS+4
VS+4
VS+4
CN202
VE+37V
GNDTV
P-ON1
FL-ON
B-CUT
GND
VSA-12
GNDA
VSA+12
GND
VS+13
STBY
VE+7.6
GNDD
VE+6
VS+6
FLDC(+)
VFDP
FLDC(-)
GNDFL
GNDFL
I
CN151
IC401 LD1084V120
IC701 LD117V25
IC301 L78M15CP
IC402 1.5A/125V
49101.5
IC451 PQ12RD08
4911.25
IC501 1.25A/125V
4911.25
IC603 1.25A/125V
IC604 0.75A/125V
491.750
IC602 KA378R05
49102.5
IC702 2.5A/125V
IC801 L7912CP
IC601
Q201
Q401
Q402
Q601
Q602
Q701
Q702
Q801
Q802
Q803
Q901
Q902
Q903
Q951
Q952
PC901
PC501
PC502
PC601
D203
D302 1SS133
D551 4.3B
D952 2.4B
D953 5.1B
L401
L451
L601
C203 120/63
C303 47/35
C402 47/35
C403 1000/16
C404 47/35
C452 47/35
C453 47/35
C502 47/35
C603 1000/10
C604 1/16
C605 1000/10
C703 47/35
C704 47/35
C705 1/16
C803 47/35
C953 0.1
C954 1/50
R203 1k
R204 27k
R402 10k
R403 1k
R451 1k
R452 1k
R551 680
R552 10k
R602 680
R603 100
R604 18k
R605 15k
JP285 0
VR601 10k
C602 0.1
R607 10k
R608 1k
R610 1k
R611 1k
R253 1k
R701 10k
R702 1k
R801 10k
R802 4.7k
R902 10k
R903 22k
R904 1.5k
R951 2.7k
R953 270
R952 10k
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 4911.25 MFD, BY LITTELFUSE INK. FOR IC501, IC603, IC951 (AEK7048).
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491.750 MFD, BY LITTELFUSE INK. FOR IC604 (AEK7062).
Q

# 3.20 WAVEFORMS

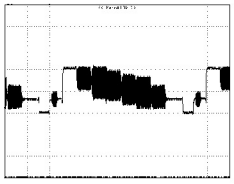
Note : The encircled numbers denote measuring point in the schematic diagram.

## C JACK ASSY

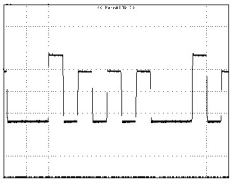
Measurement condition ;

| | |
|---|---|
| No.1, No.18 to No.30 | : 75% Color-bar |
| No.3, No.16 | : 75% Color-bar, APX disc 1-24 |
| No.2, No.31, No.32 | : 1kHz, 2Vrms |
| No.17 | : 1kHz, 2Vrms, APX disc 1-1 |

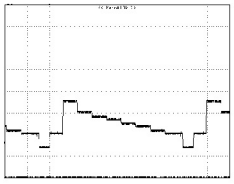
**(1) CN704-pin 1 (UVOUT)**
**(Function : Tuner 2 ch)**
V: 500mV/div. H: 10µsec/div.



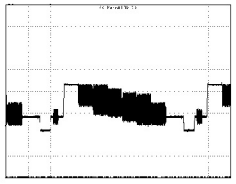

**(6) IC701-pin 56 (B)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



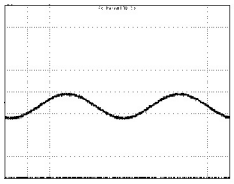

**(11) CN701-pin 4 (YOUT)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



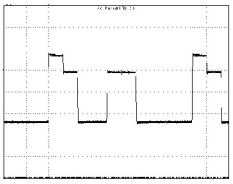

**(16) IC503-pin 2 (YCMIX)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



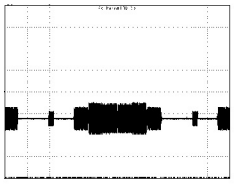

**(2) CN704-pin 23 (TVL)**
**(Function : Tuner 2 ch)**
V: 1V/div. H: 200µsec/div.



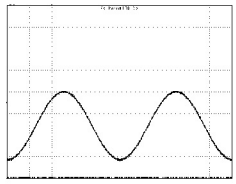

**(7) IC701-pin 60 (R/C)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



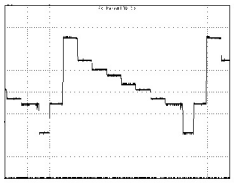

**(12) CN701-pin 6 (COUT)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



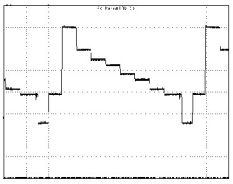

**(17) IC501-pin 42 (Lout)**
**(Function : DVD play)**
V: 2V/div. H: 200µsec/div.



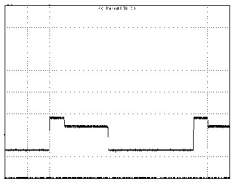

**(3) IC501-pin 25 (V/Yout)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



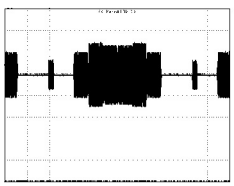

**(8) IC701-pin 63 (YOUT2)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



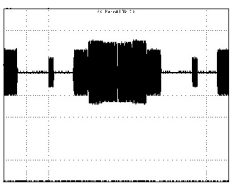

**(13) CN701-pin 8 (GOUT)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



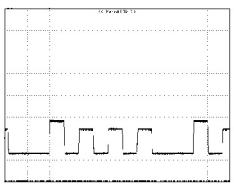

**(4) IC701-pin 60 (R/Cout)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



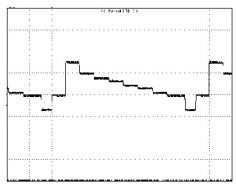

**(9) IC701-pin 65 (COUT2)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



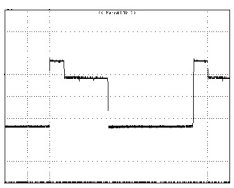

**(14) CN701-pin 10 (BOUT)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



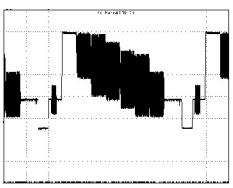

**(18) JA502-pin 20 (V/Yin)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



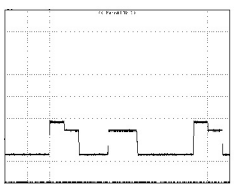

**(5) IC701-pin 58 (G)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.



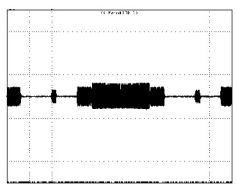

**(10) IC701-pin 68 (CVOUT2)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.




**(15) CN701-pin 12 (ROUT)**
**(Function : DVD play)**
V: 500mV/div. H: 10µsec/div.

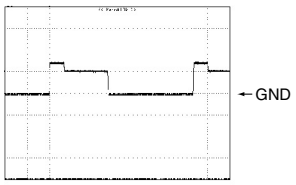



**(19) JA502-pin 15 (R/Cin)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.

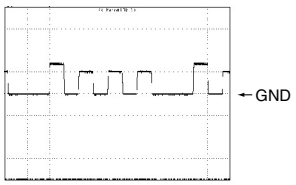


## C JACK ASSY

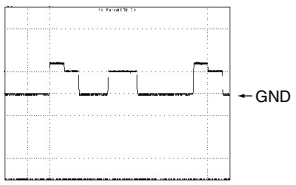
**20** **JA502-pin 11 (Gin)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



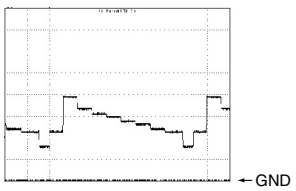

**21** **JA502-pin 7 (Bin)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



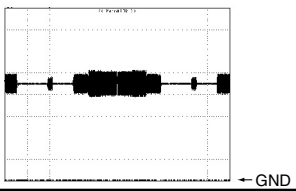

**22** **JA502-pin 15 (R/Cin)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



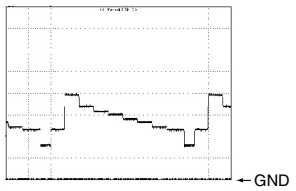

**23** **CN701-pin 24 (Y/CVBS)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



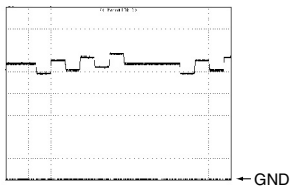

**24** **CN701-pin 26 (C/CB)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



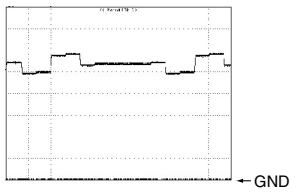

**25** **CN701-pin 24 (Y/CVBS)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



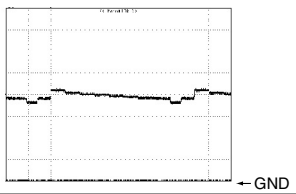

**26** **CN701-pin 26 (C/CB)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



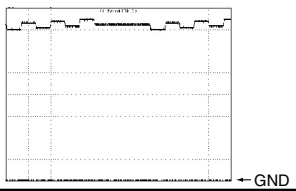

**27** **CN701-pin 22 (CR)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



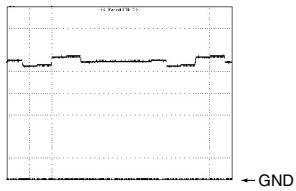

**28** **Q805-E (YIN)**
**(Function : LINE1 IN)**
V: 1V/div. H: 10µsec/div.



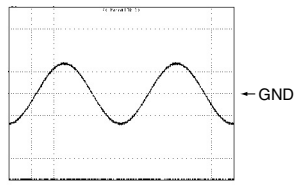

**29** **Q206-E (CBIN)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.



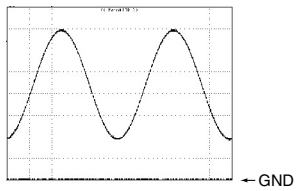

**30** **Q207-E (CRIN)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 10µsec/div.

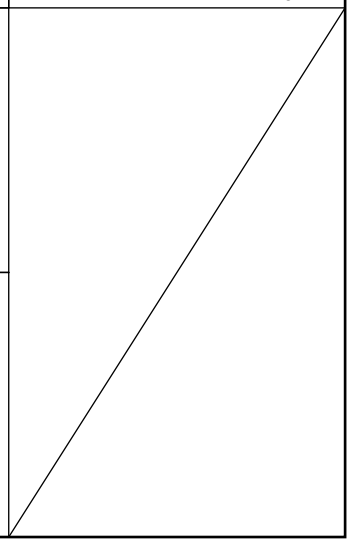



**31** **JA502-pin 6 (Lin)**
**(Function : LINE1 IN)**
V: 2V/div. H: 200µsec/div.




**32** **CN701-pin 28 (ALT to M)**
**(Function : LINE1 IN)**
V: 500mV/div. H: 200µsec/div.

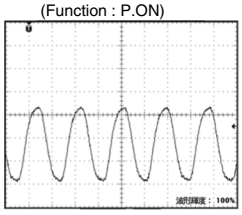


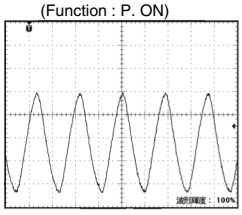
# D MAIN ASSY

Measurement condition ;
No.3 to No.8, No.10 to No.13 : 75% Color-bar, A1 disc 2-20
No.15 ,No.16 : 75% Color-bar
No.9, No.14 : 1kHz, 2Vrms, A1 disc 2-1
No.17 : 1kHz, 2Vrms

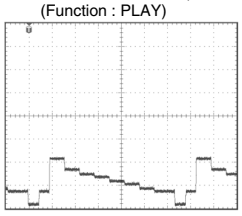
**1** **X4102 - pin 4 (ADMCLKI)**
V: 1V/div. H: 20nsec/div.
(Function : P.ON)



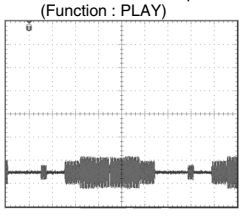

**2** **R4205 (VMCLK)**
V: 1V/div. H: 20nsec/div.
(Function : P. ON)



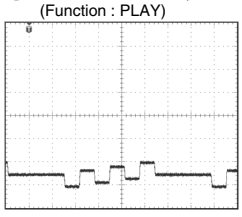

**3** **Q2103 - B (Y)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



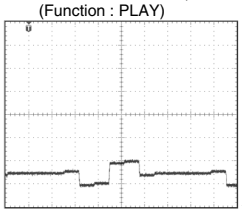

**4** **Q2102 - B (C)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



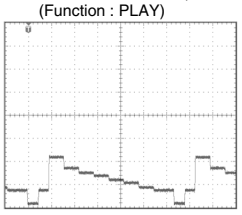

**5** **Q2104 - B (Cb)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



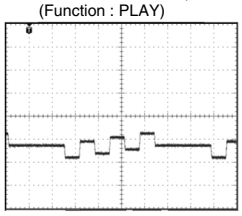

**6** **Q2105 - B (Cr)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



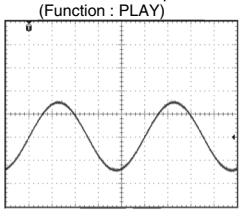

**7** **Q2101 - B (Y)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



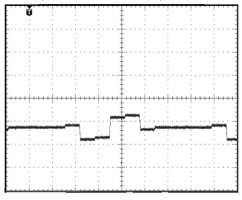

**8** **CN2001-pin 23 (Cb Out)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



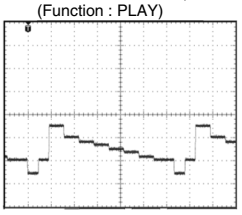

**9** **CN2001-pin 17 (Lch Out)**
V: 2V/div. H: 200µsec/div.
(Function : PLAY)



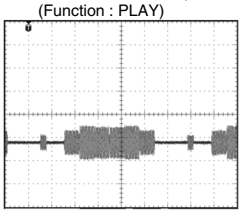

**10** **CN2001-pin 21 (Cr Out)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



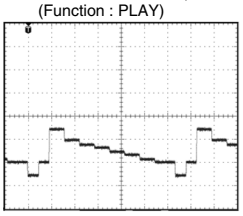

**11** **CN2001-pin 29 (Y Out)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



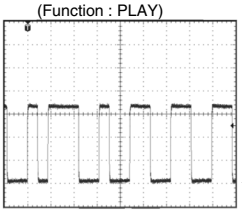

**12** **CN2001-pin 27 (C Out)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



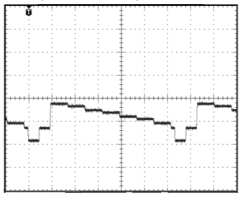

**13** **CN2001-pin 25 (Y Out)**
V: 500mV/div. H: 10µsec/div.
(Function : PLAY)



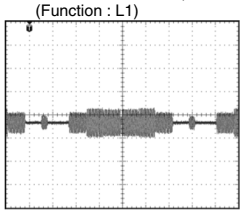

**14** **CN3001-pin 13 (PCMAIN)**
V: 1V/div. H: 400nsec/div.
(Function : PLAY)



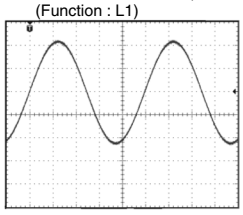

**15** **CN2001-pin 9 (SEL Y/V)**
V: 500mV/div. H: 10µsec/div.
(Function : L1)



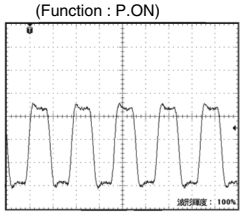

**16** **CN2001-pin 7 (SEL C)**
V: 500mV/div. H: 10µsec/div.
(Function : L1)




**17** **CN2001-pin 5 (SEL L)**
V: 500mV/div. H: 200µsec/div.
(Function : L1)




**18** **IC3402-pin 7 (27MCLK)**
V: 1V/div. H: 20nsec/div.
(Function : P.ON)



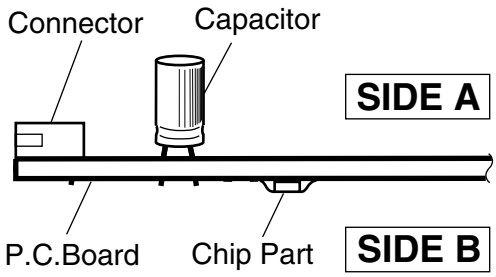
# 4. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

| Symbol In PCB Diagrams | Symbol In Schematic Diagrams | Part Name |
|---|---|---|
| B C E | B C E B C E | Transistor |
| B C E | B C E B C E | Transistor with resistor |
| D G S | D G S D G S | Field effect transistor |
| | | Resistor array |
| | | 3-terminal regulator |

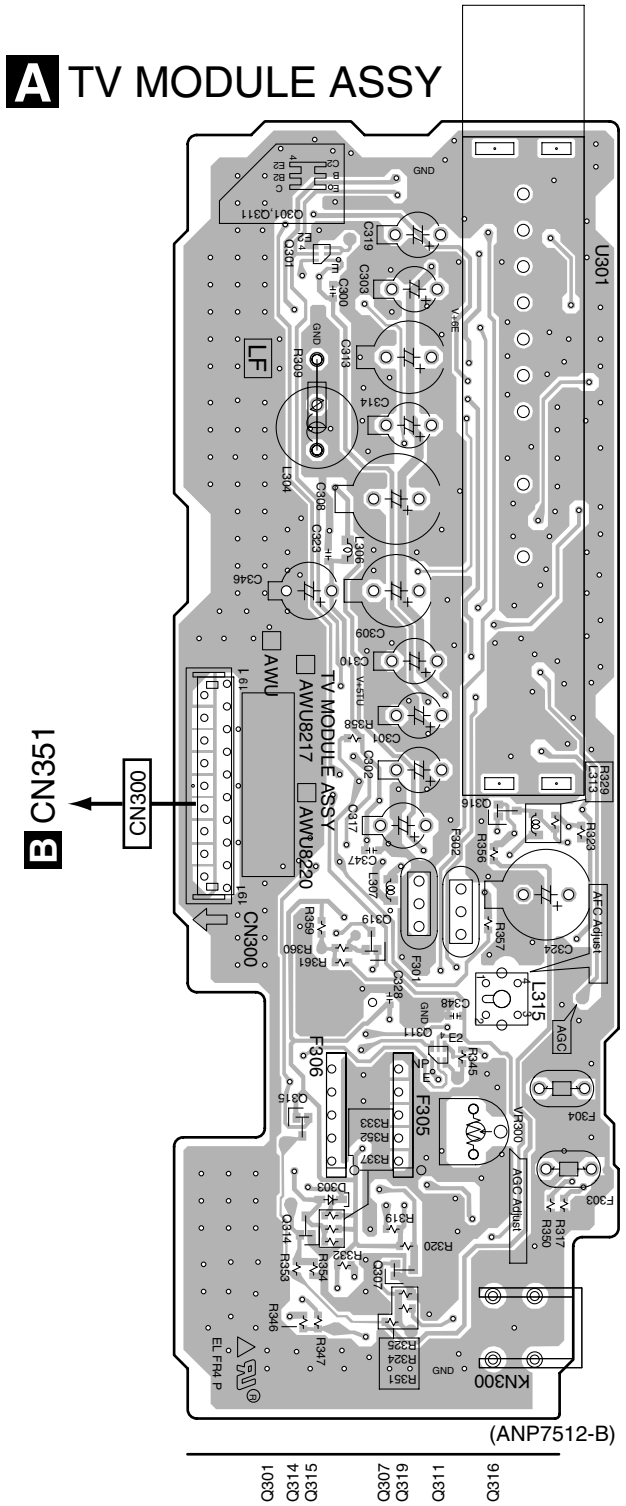
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.

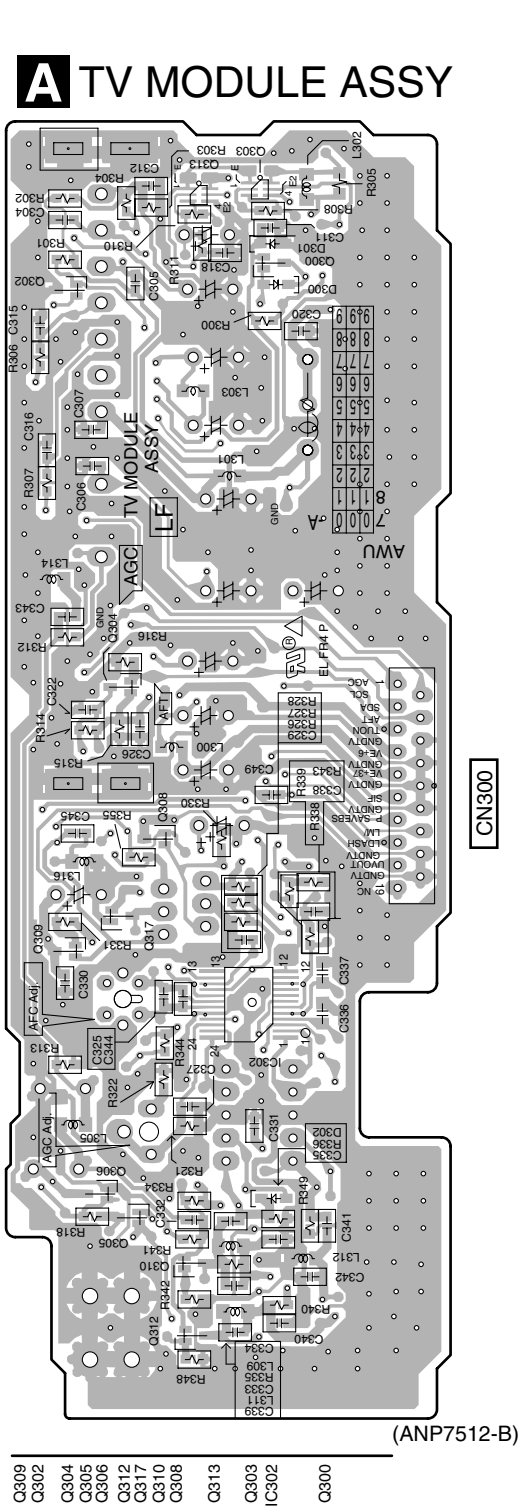


# 4.1 TV MODULE ASSY

**SIDE A**

**SIDE B**

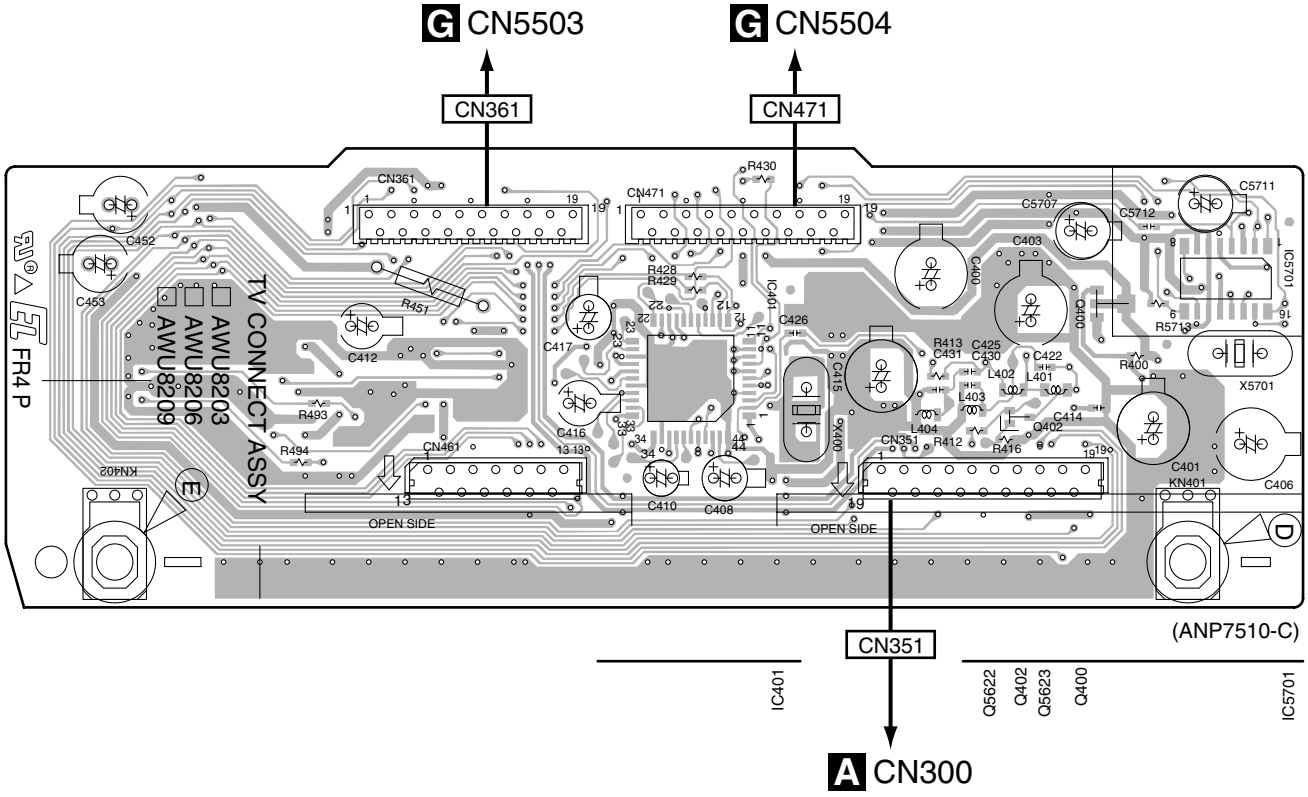


## 4.2 TV CONNECT ASSY

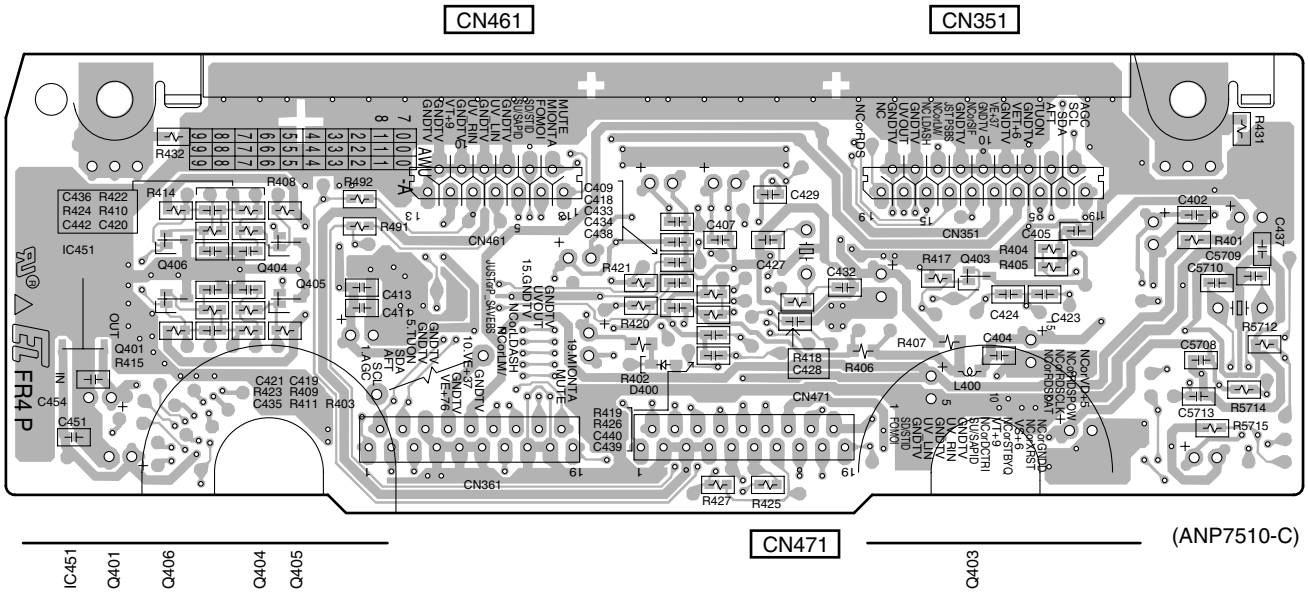
**SIDE A** **SIDE A**

### B TV CONNECT ASSY



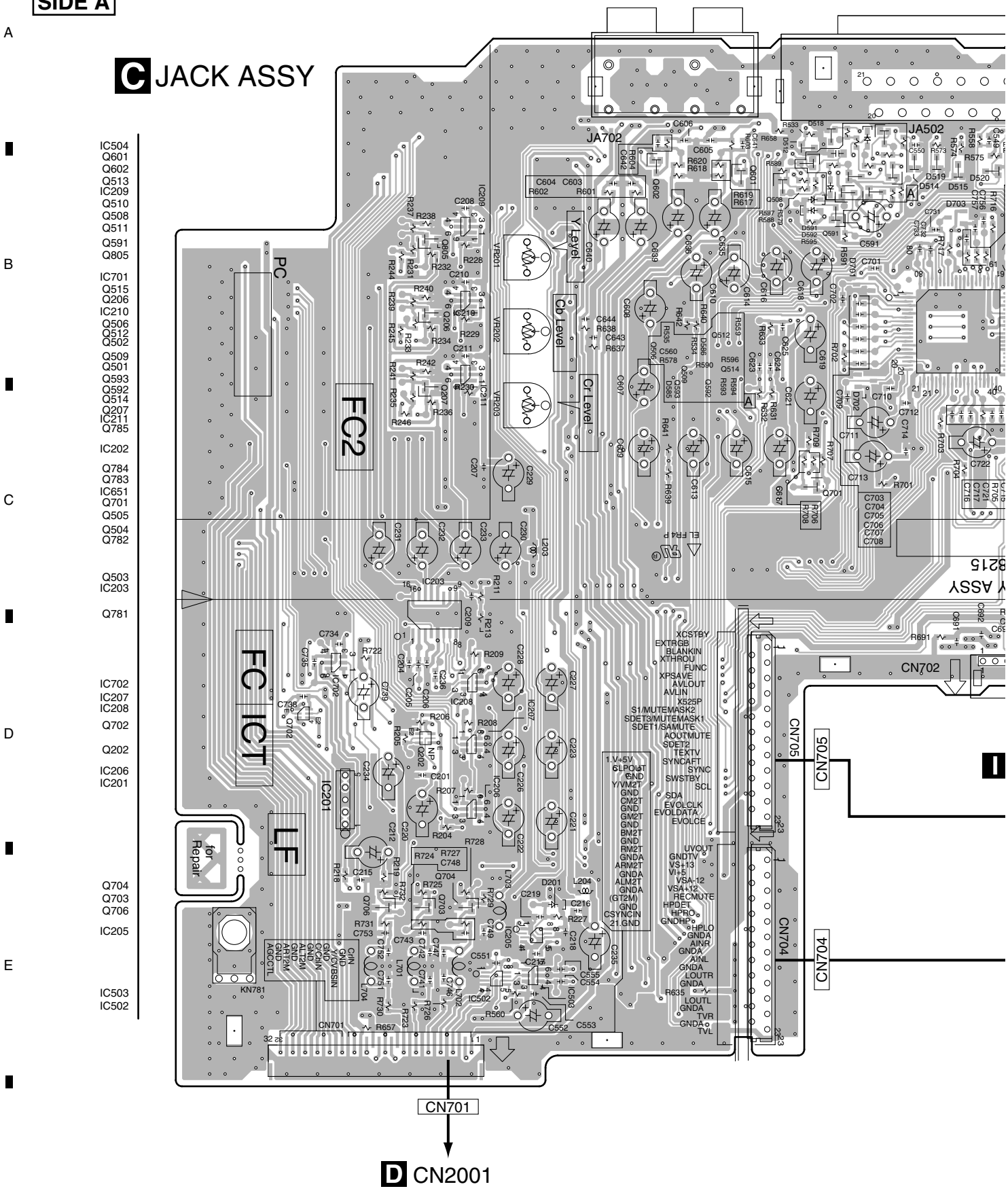

**SIDE B** **SIDE B**

### B TV CONNECT ASSY

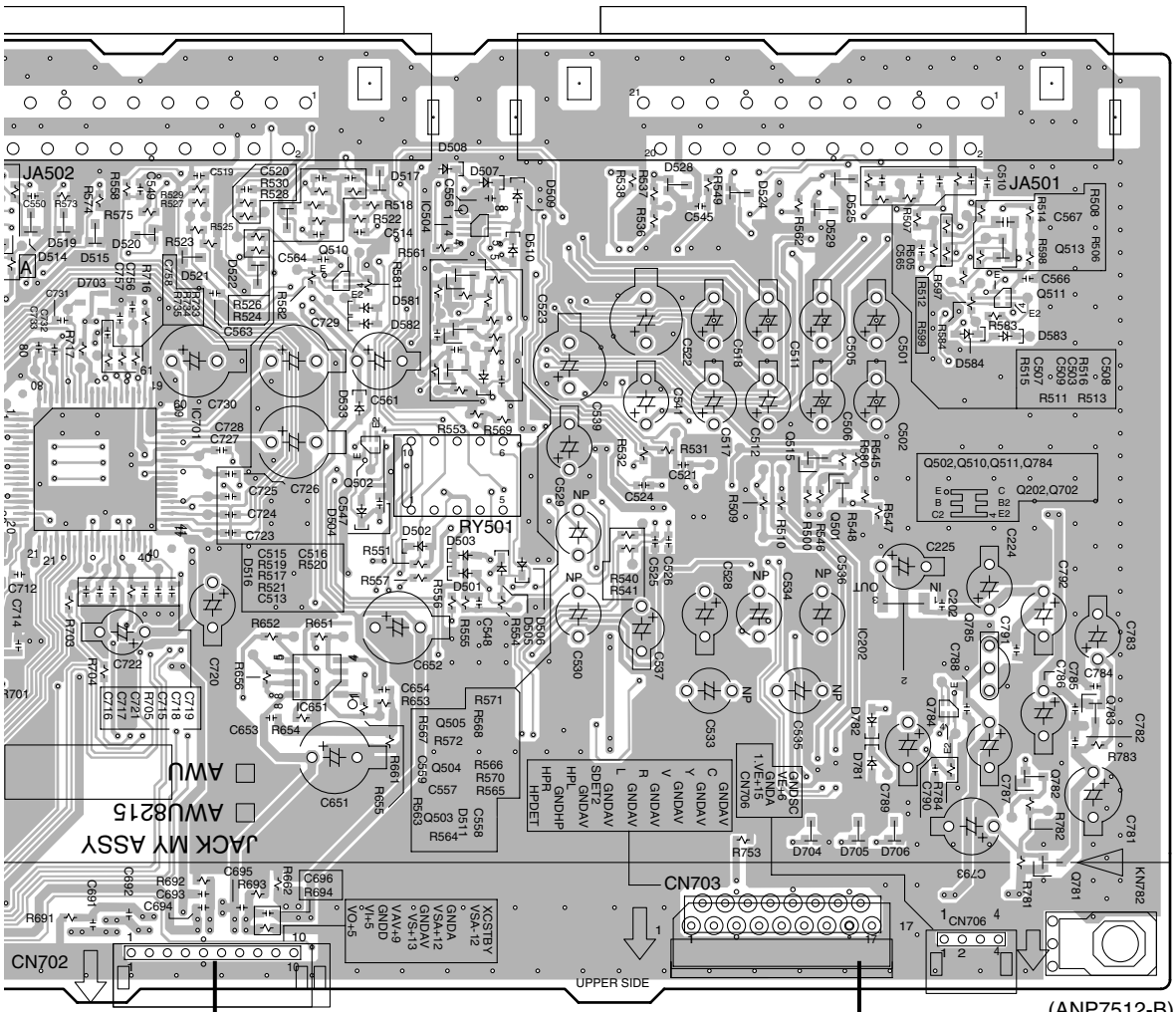


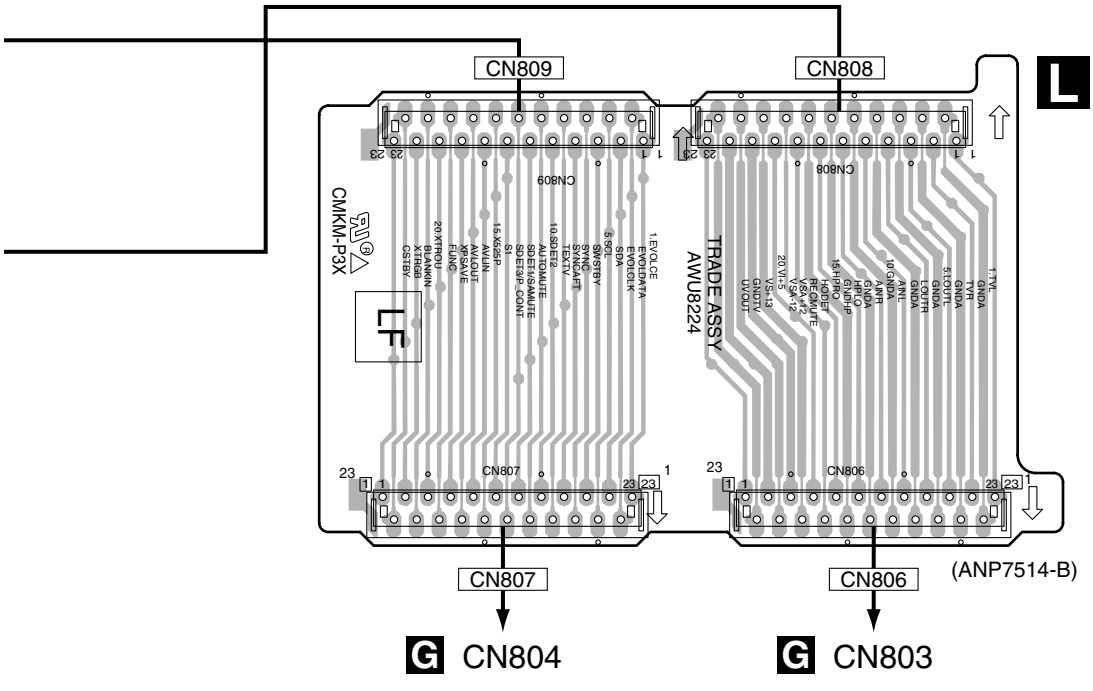
# 4.3 JACK and TRADE ASSYS

**SIDE A**



**SIDE A**

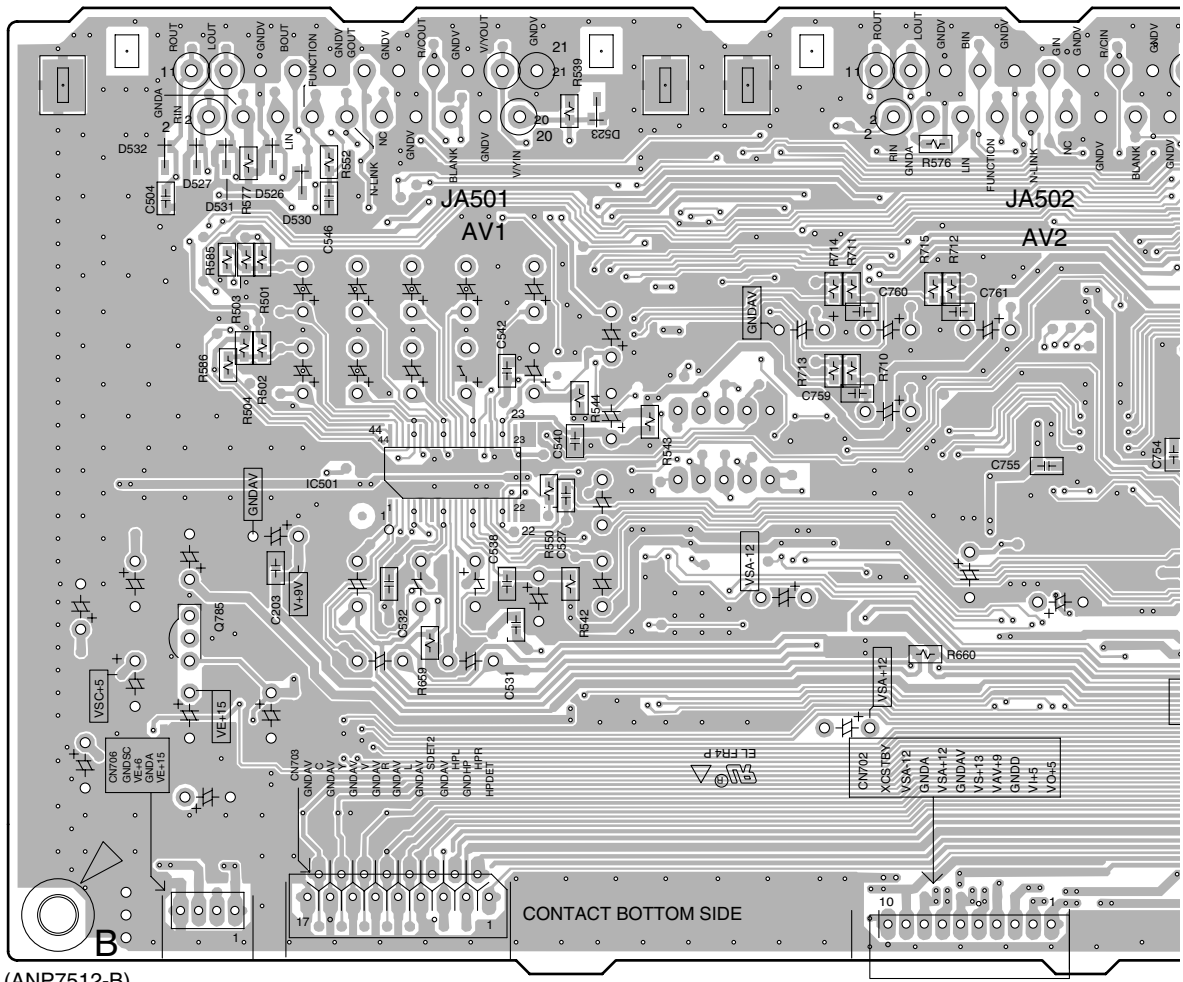



**L** TRADE ASSY

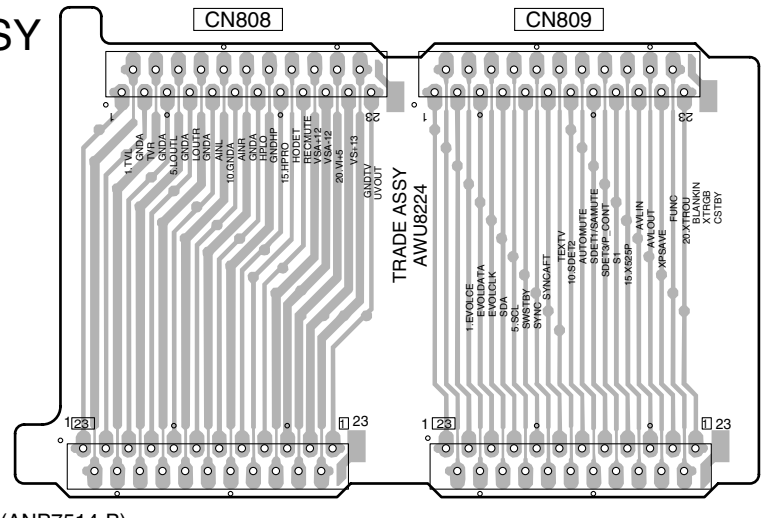
**SIDE B**

## C JACK ASSY




(ANP7512-B)

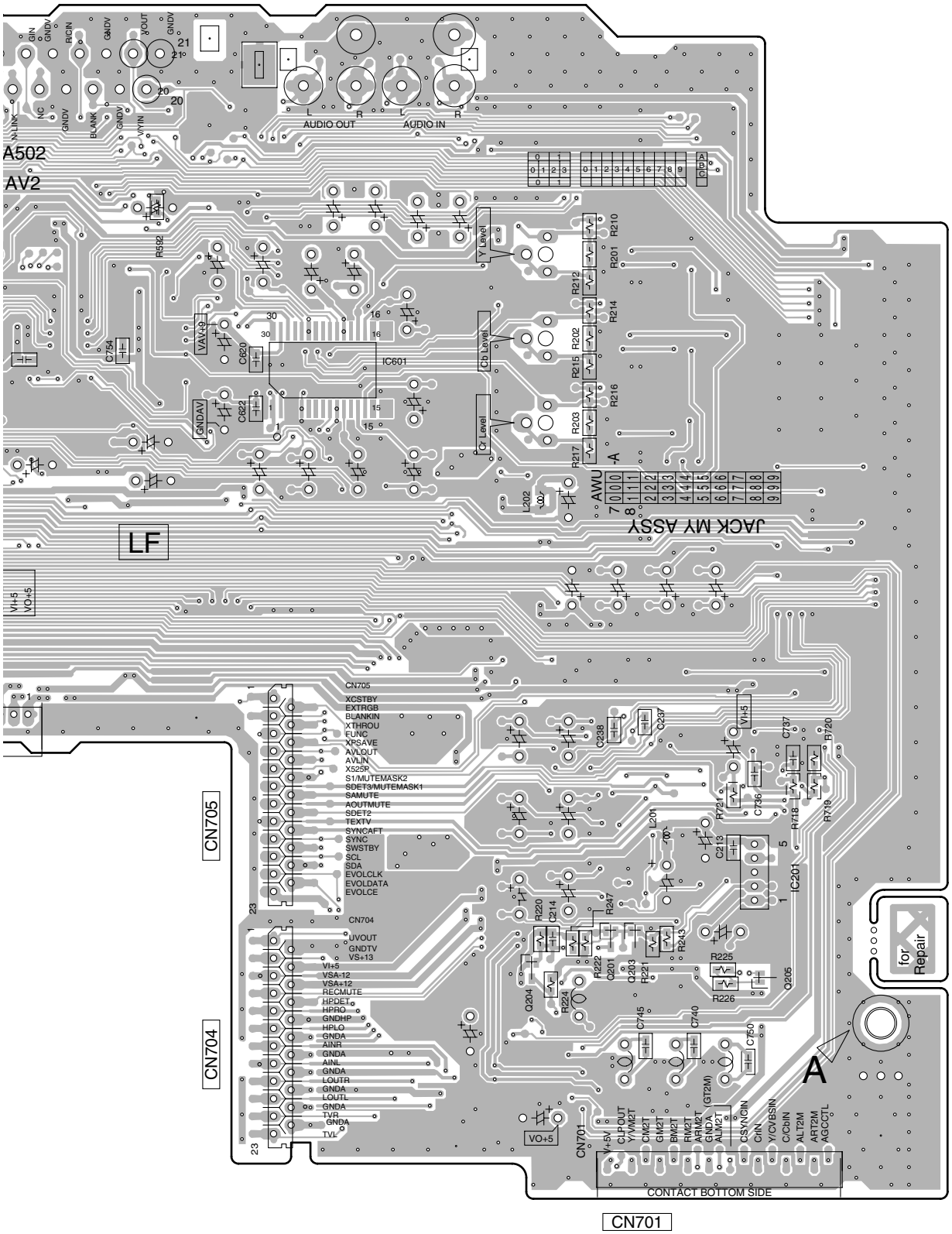
## L TRADE ASSY




(ANP7514-B)

**C L**

**SIDE B**




IC601
IC501

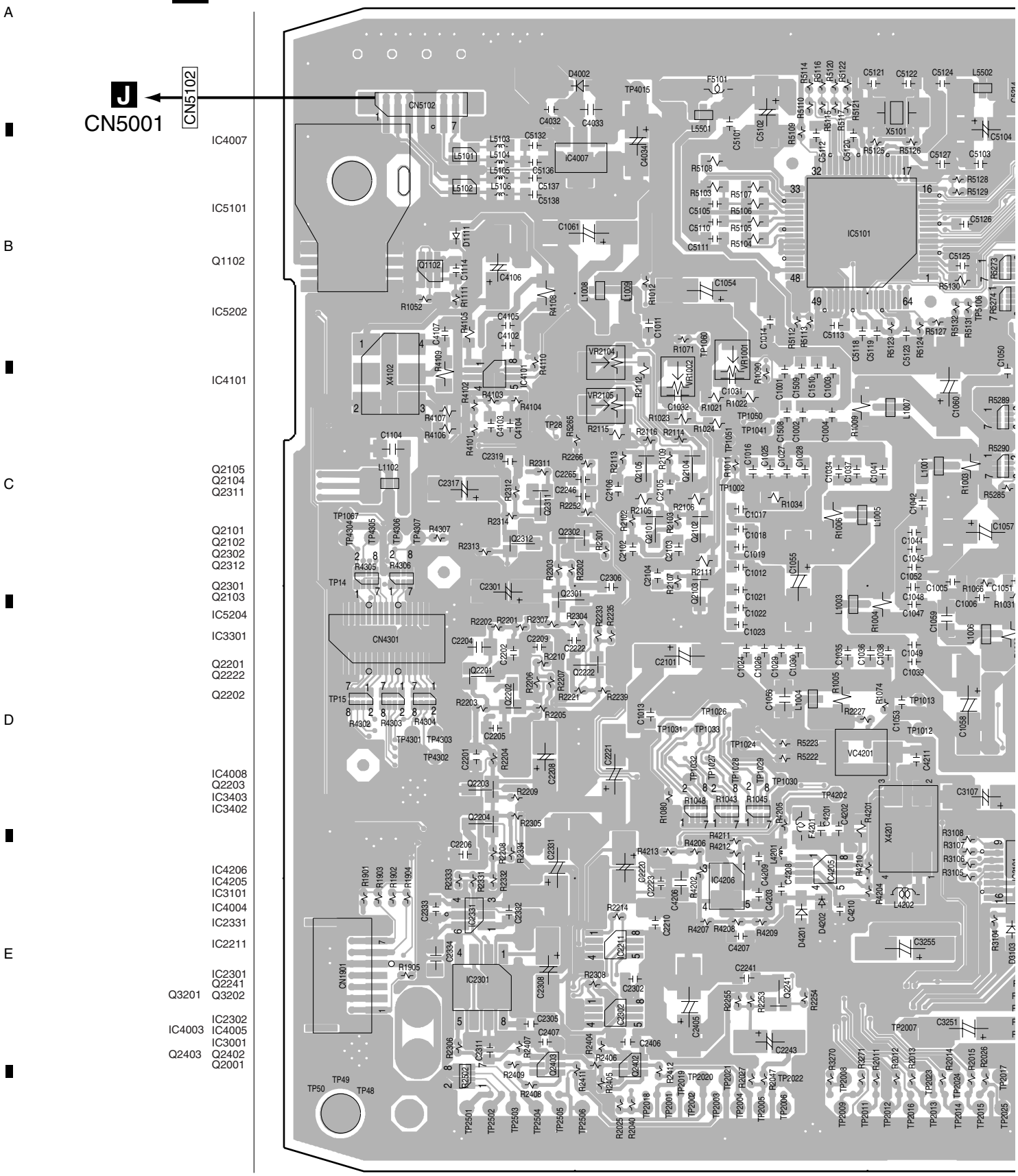
Q201
Q203
Q205

Q204

## 4.4 MAIN ASSY

**SIDE A**

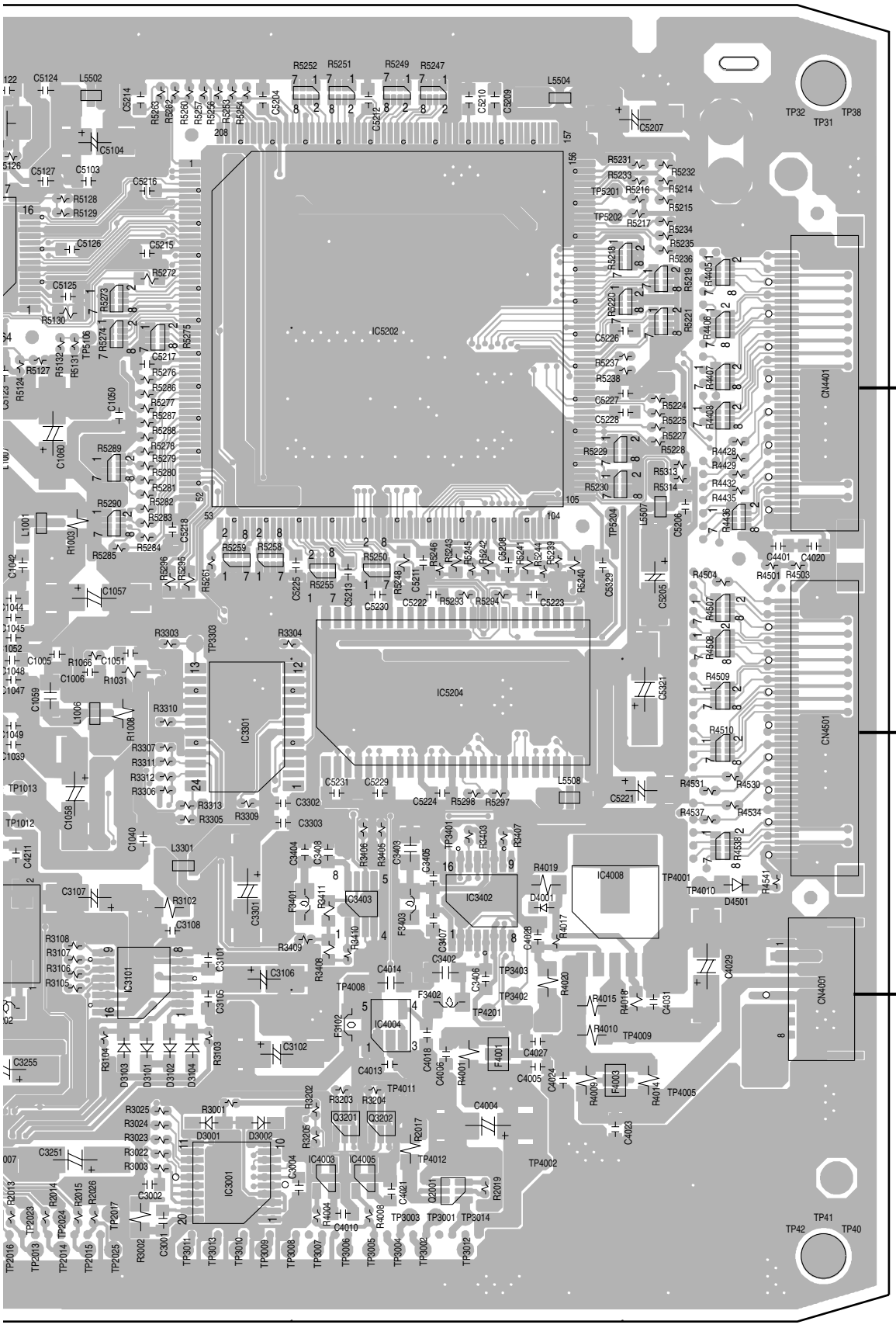
**D** MAIN ASSY




**D**

**SIDE A**

This PCB is six layer structure.

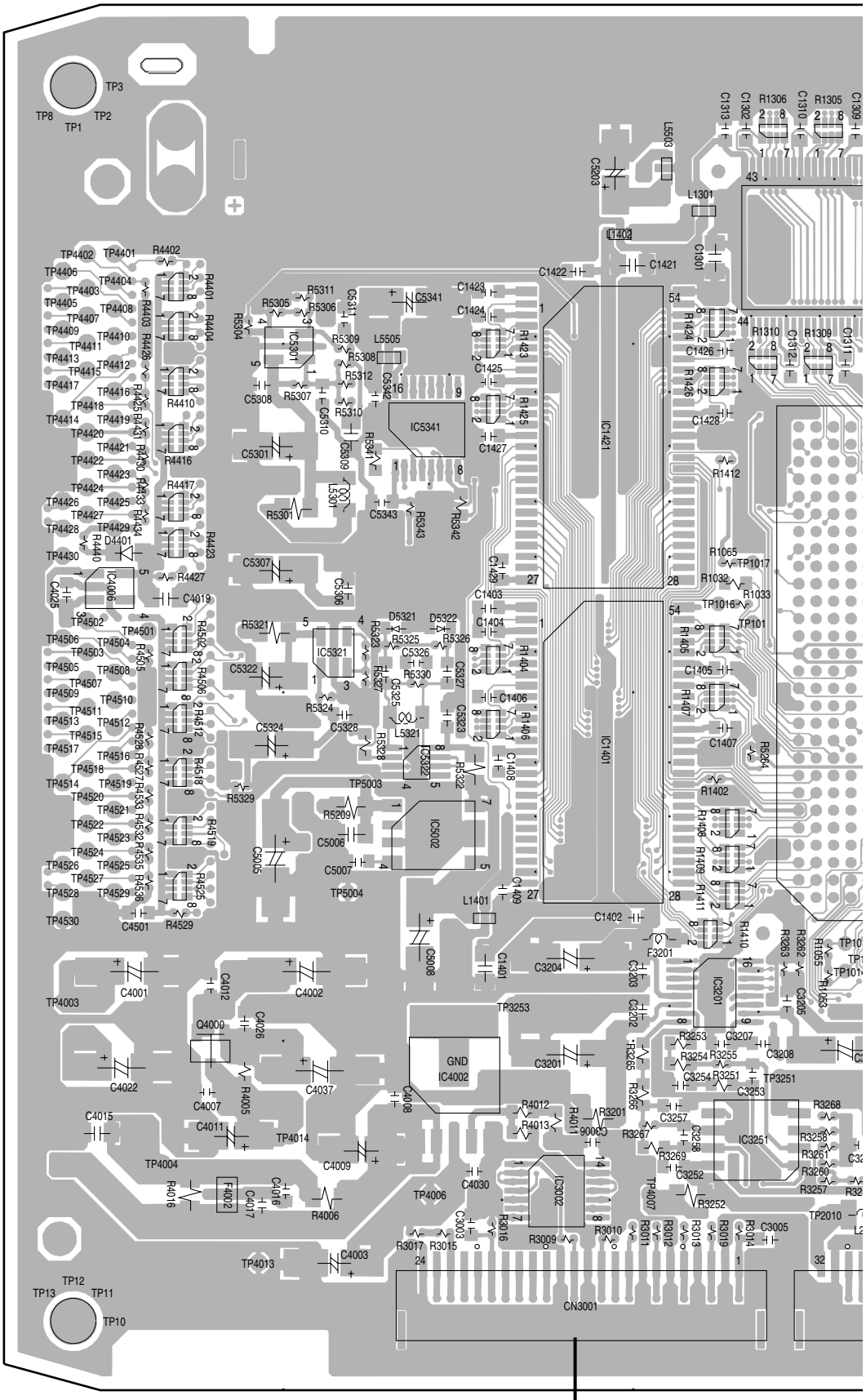



(VNP1960-C)

**D**

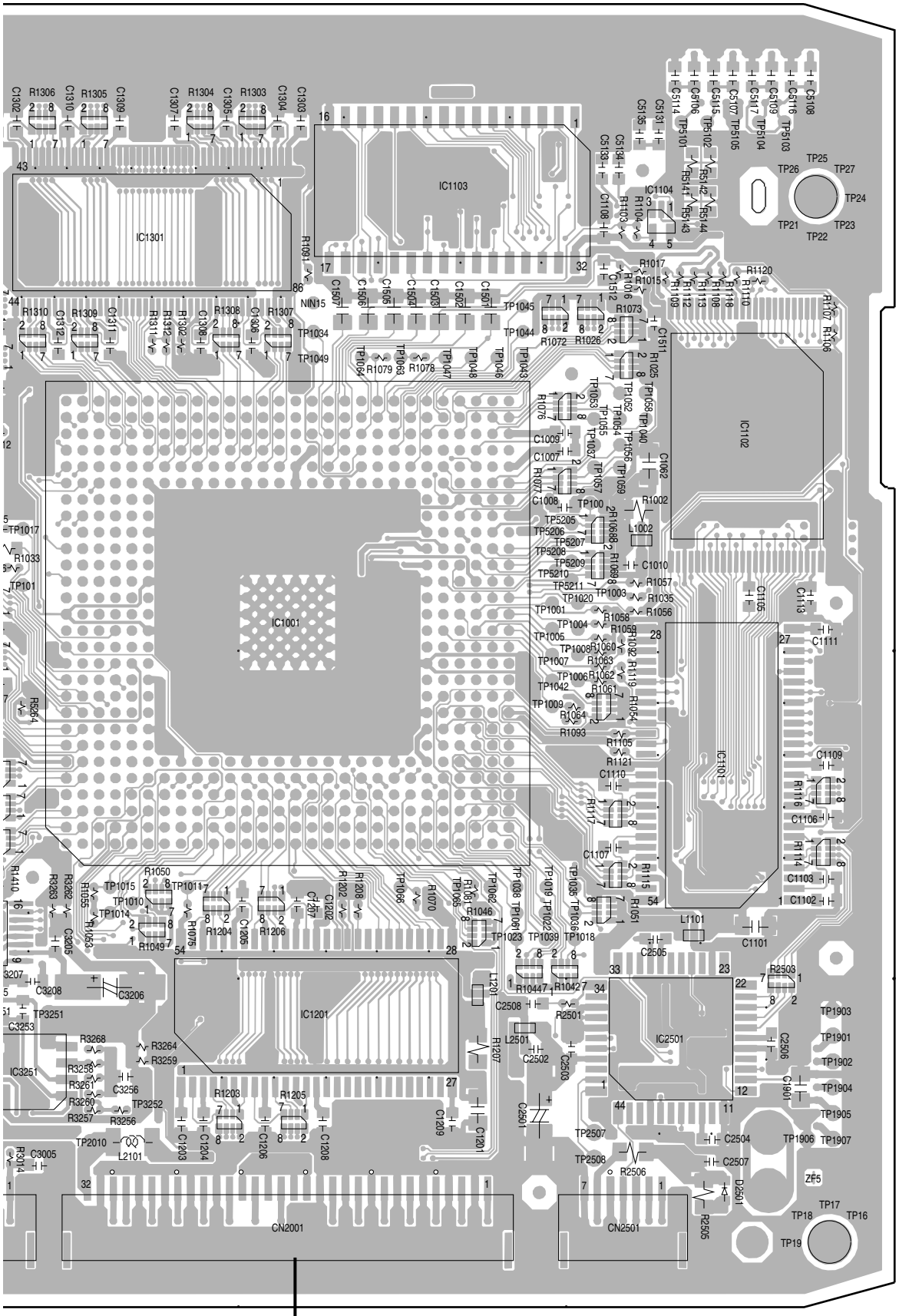
**SIDE B**

# D MAIN ASSY



**SIDE B**

This PCB is six layer structure.




(VNP1960-C)

CN2001

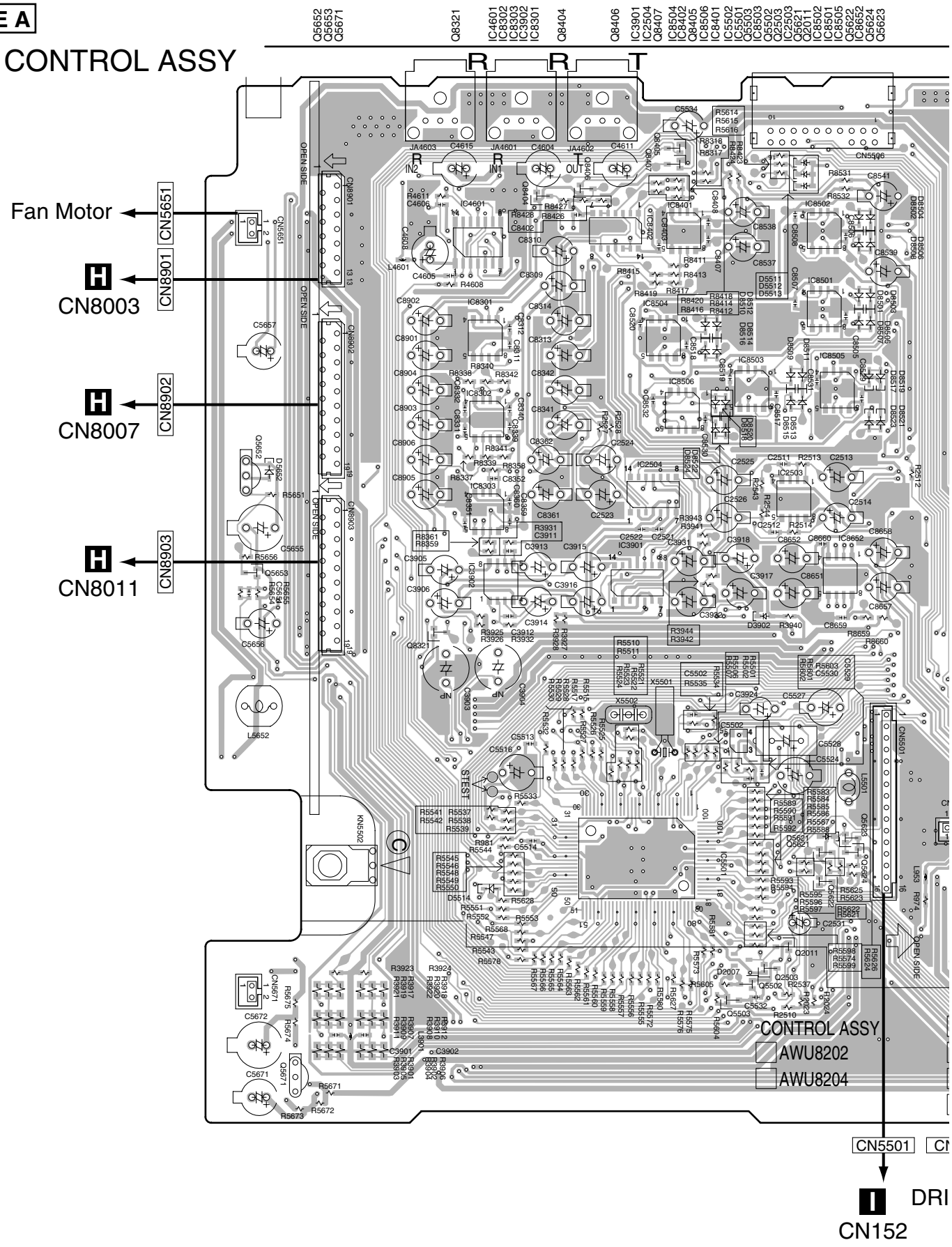
**C** CN701

**D**

# 4.5 CONTROL ASSY

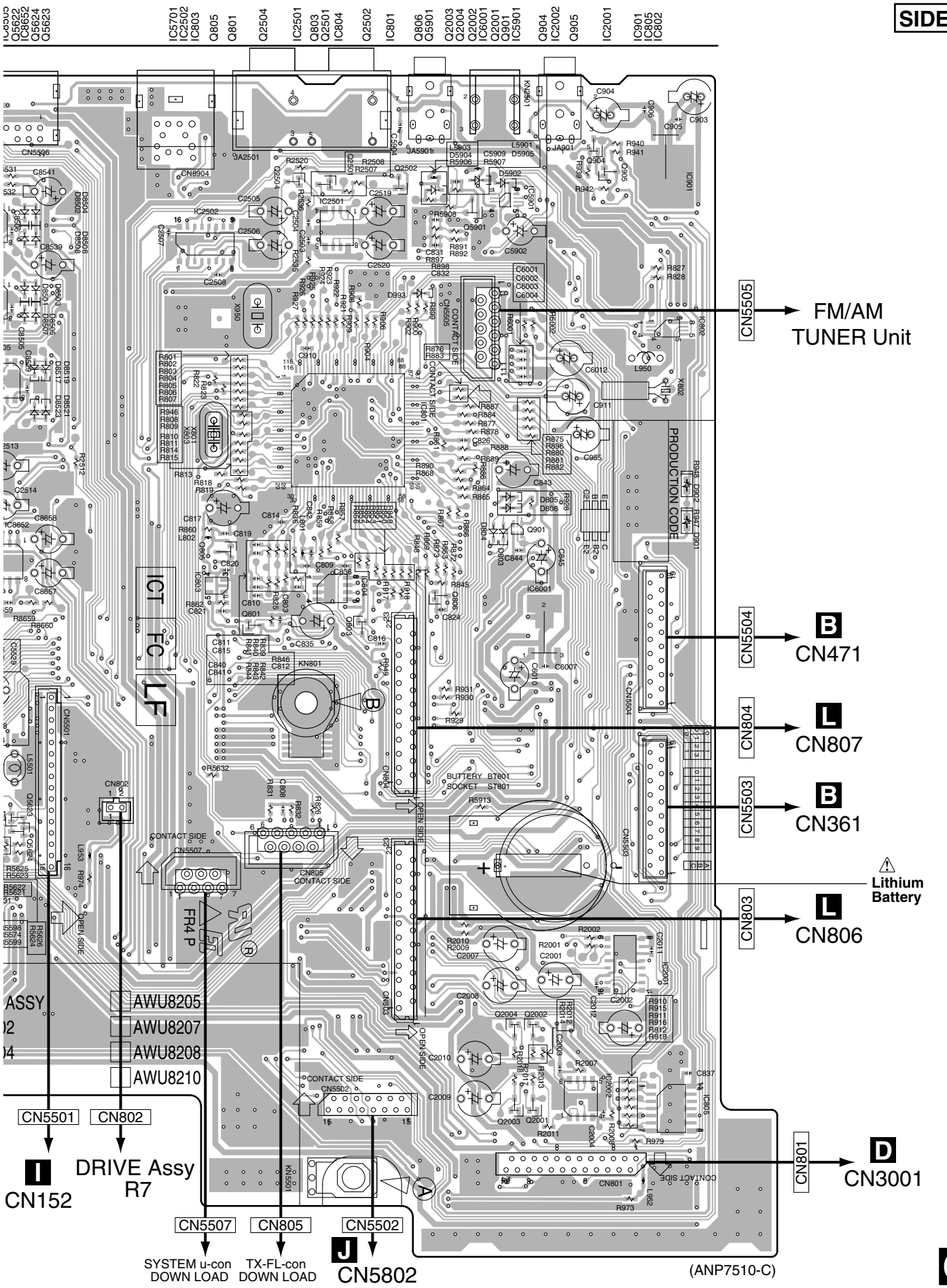
**SIDE A**

**G** CONTROL ASSY



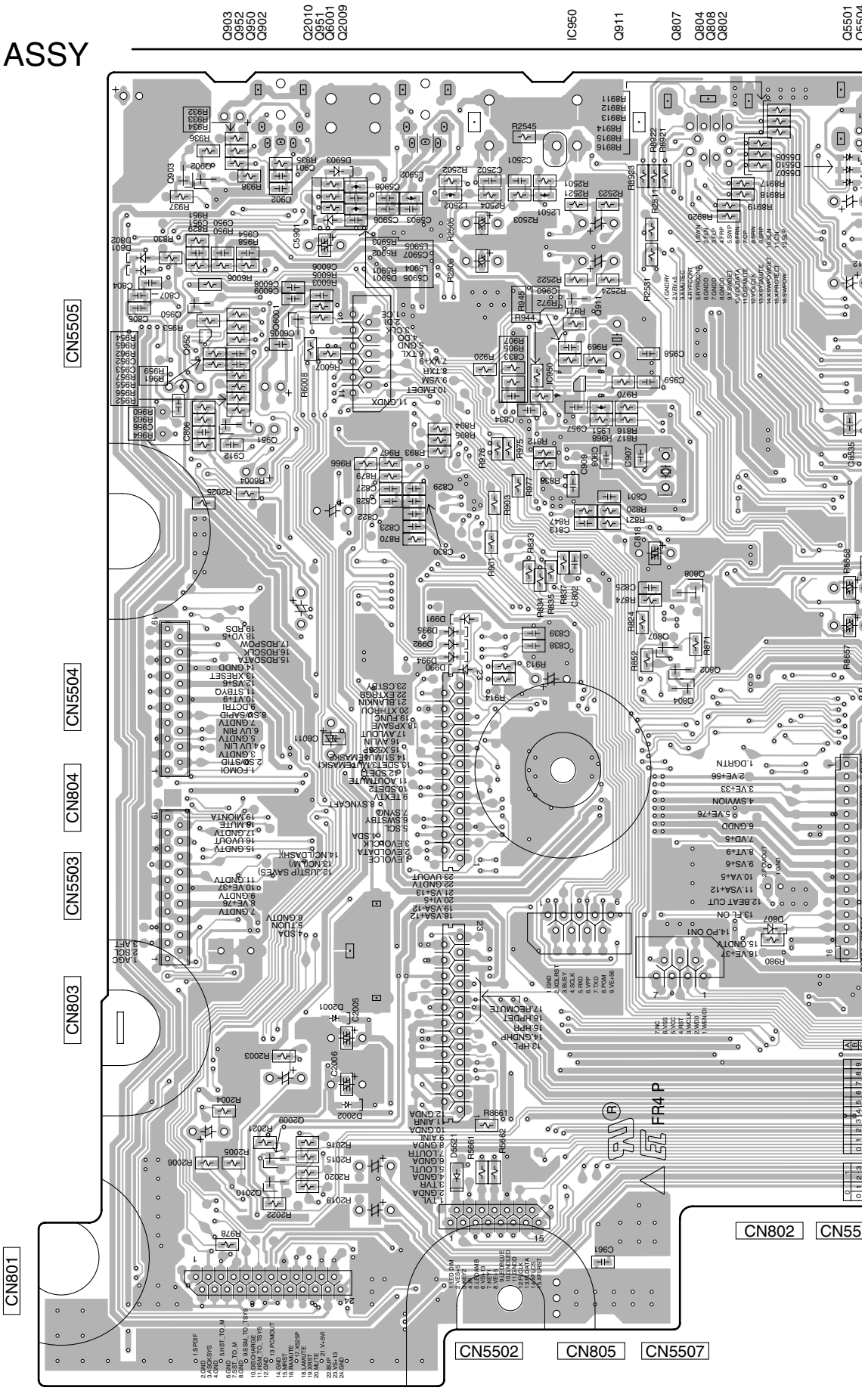

**G**

**SIDE A**


CN5505
FM/AM TUNER Unit
CN5504
B
CN471
CN804
L
CN807
CN5503
B
CN361
Lithium Battery
CN803
L
CN806
CN801
D
CN3001
CN5501
CN802
I
CN152
DRIVE Assy R7
CN5507
SYSTEM u-con DOWN LOAD
CN805
TX-FL-con DOWN LOAD
CN5502
J
CN5802
AWU8205
AWU8207
AWU8208
AWU8210
ICT
FC
LF
PRODUCTION CODE
BUTTERY
SOCKET
BT801
ST801
(ANP7510-C)

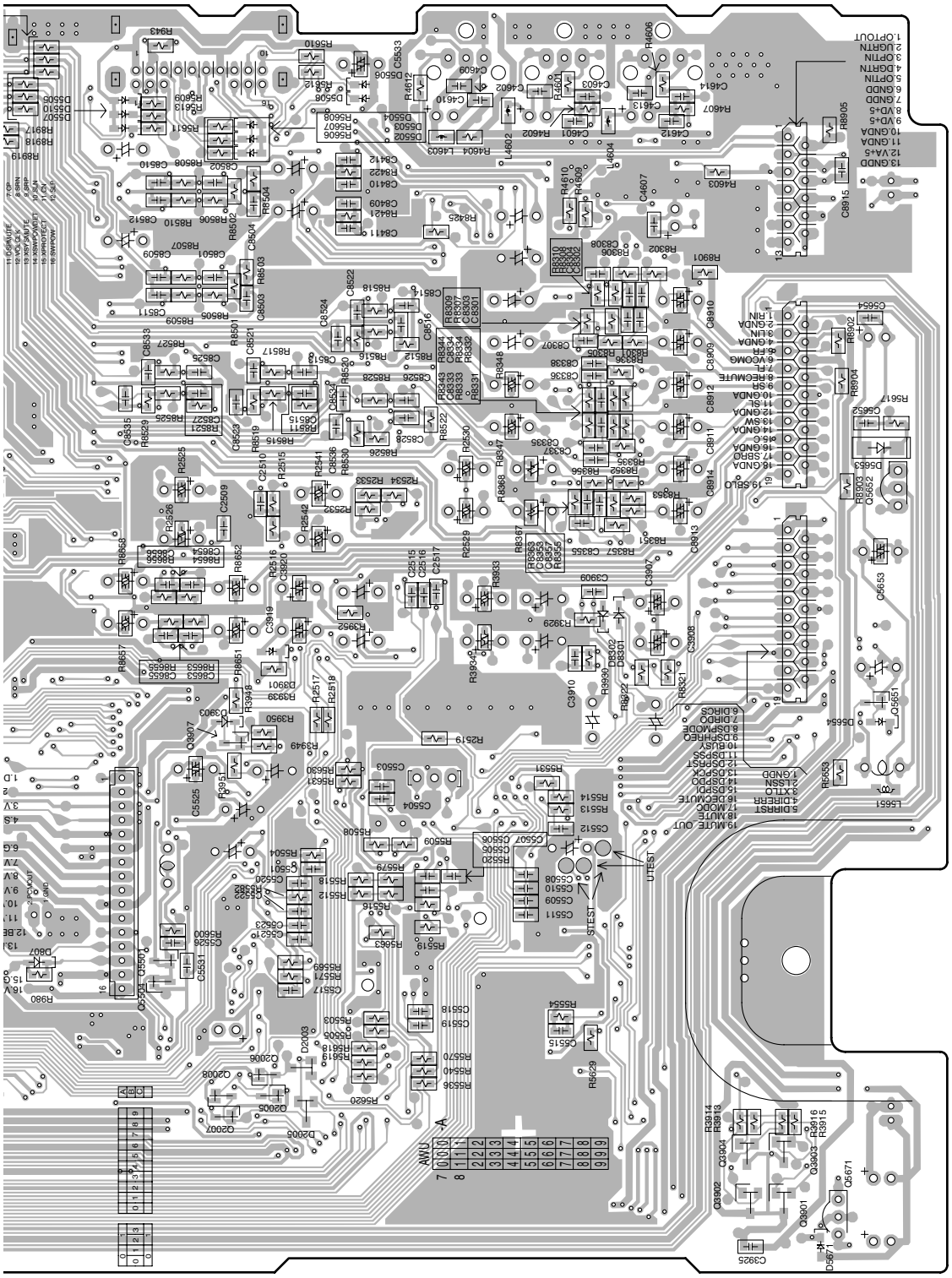
**SIDE B**

# G CONTROL ASSY



**SIDE B**

Q5501 Q5504 Q3907 Q2008 Q2007 Q2006 Q2005 Q3902 Q3904 Q3903 Q3901 Q5651



CN8901 CN5651

CN8902

CN8903

CN802 CN5501

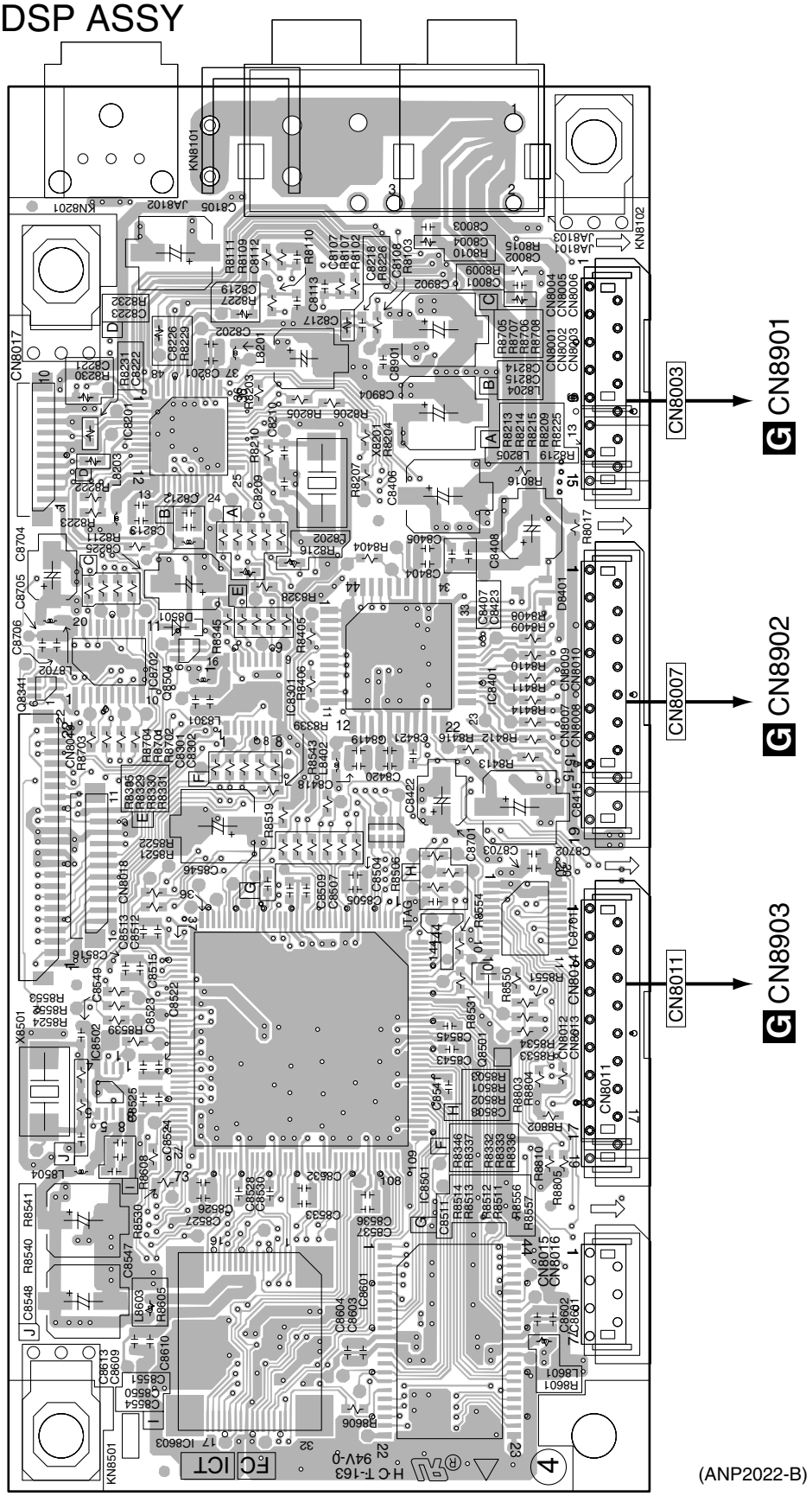
(ANP7510-C)

# 4.6 DSP ASSY

SIDE A

H DSP ASSY

SIDE A

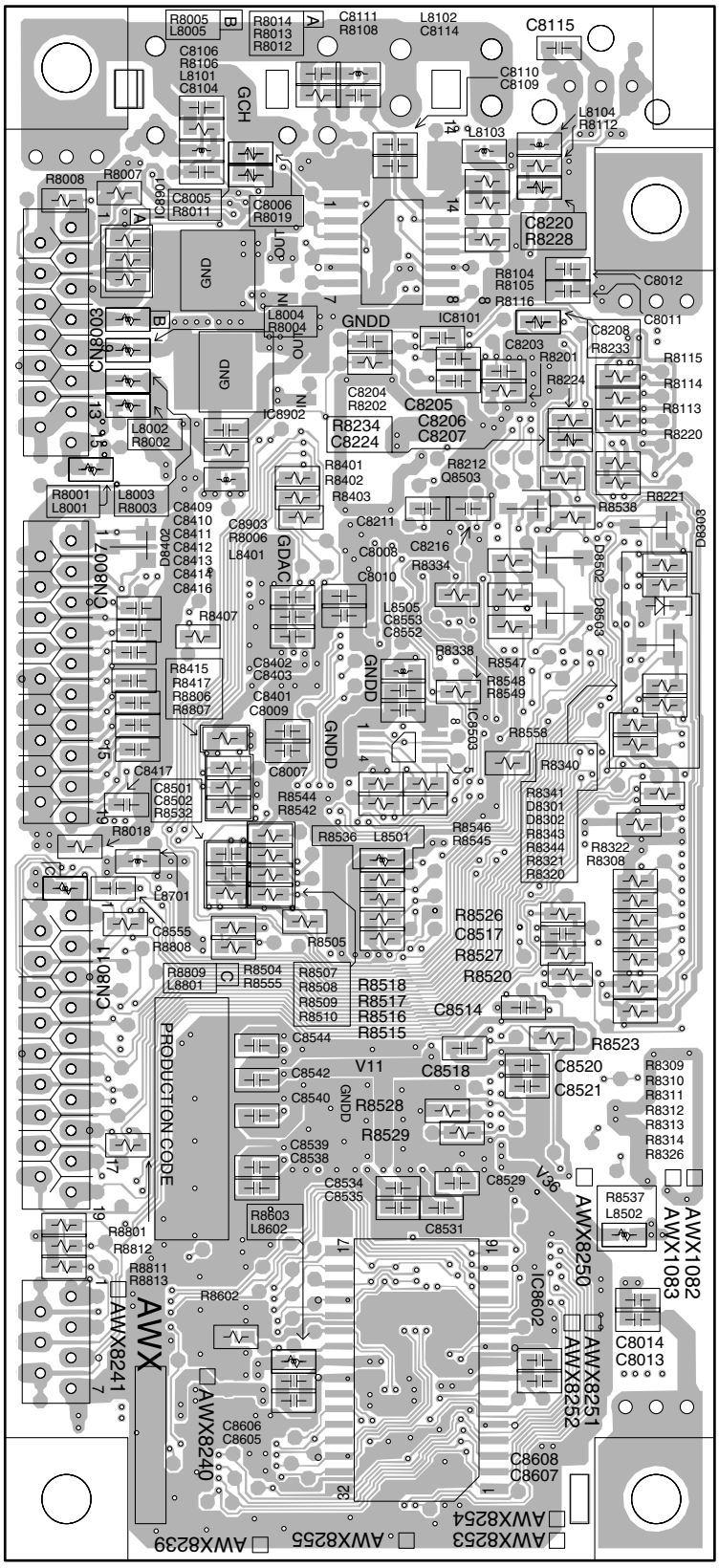



(ANP2022-B)

SIDE B

SIDE B

# H DSP ASSY

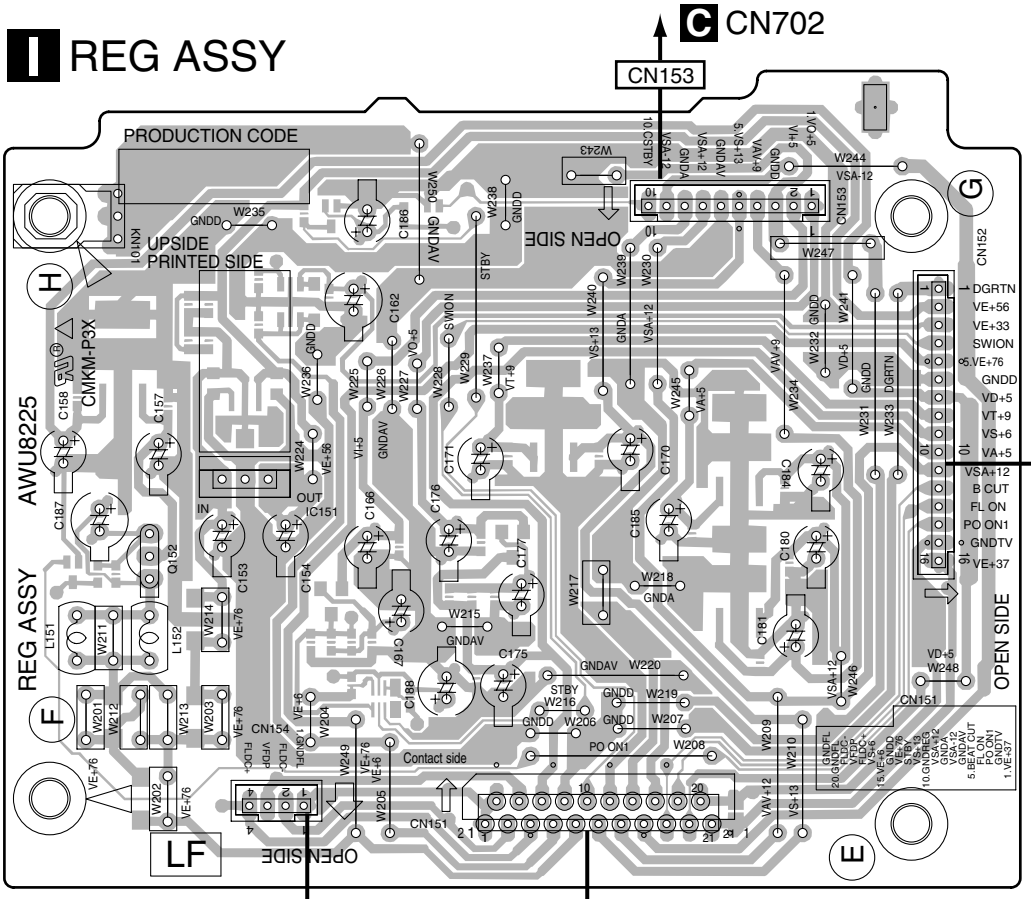



(ANP2022-B)

## 4.7 REG ASSY

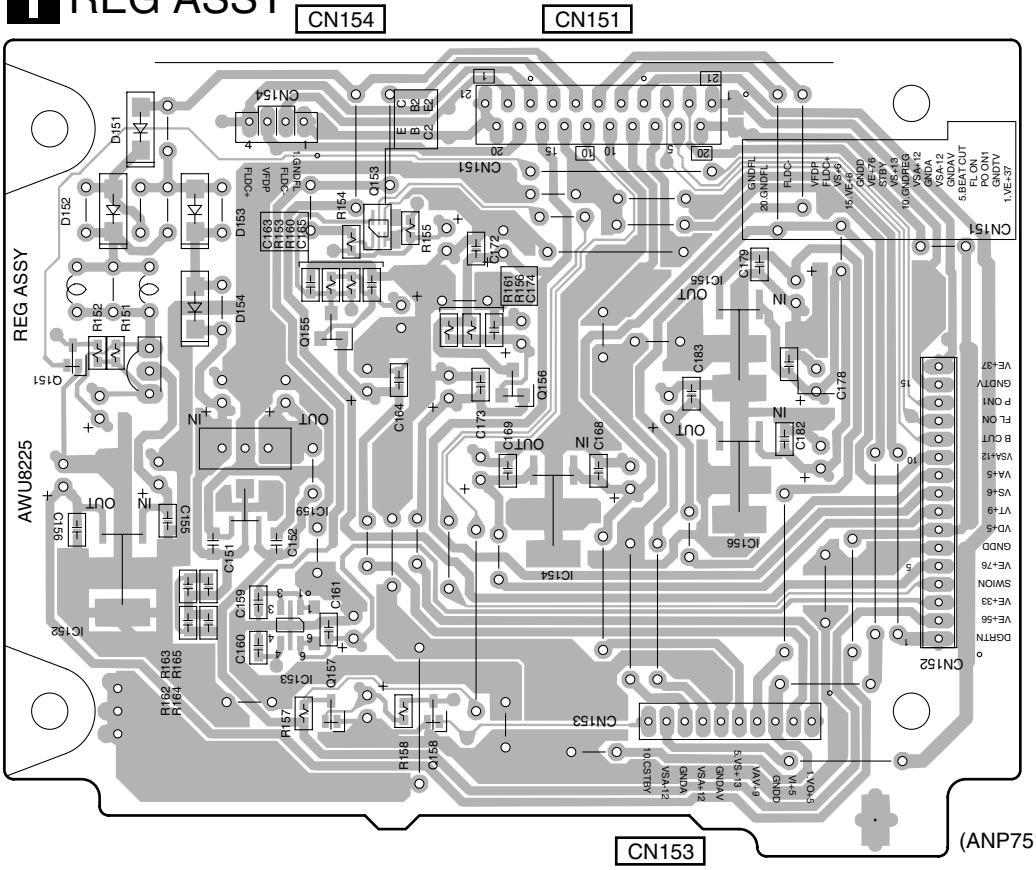
SIDE A

I REG ASSY

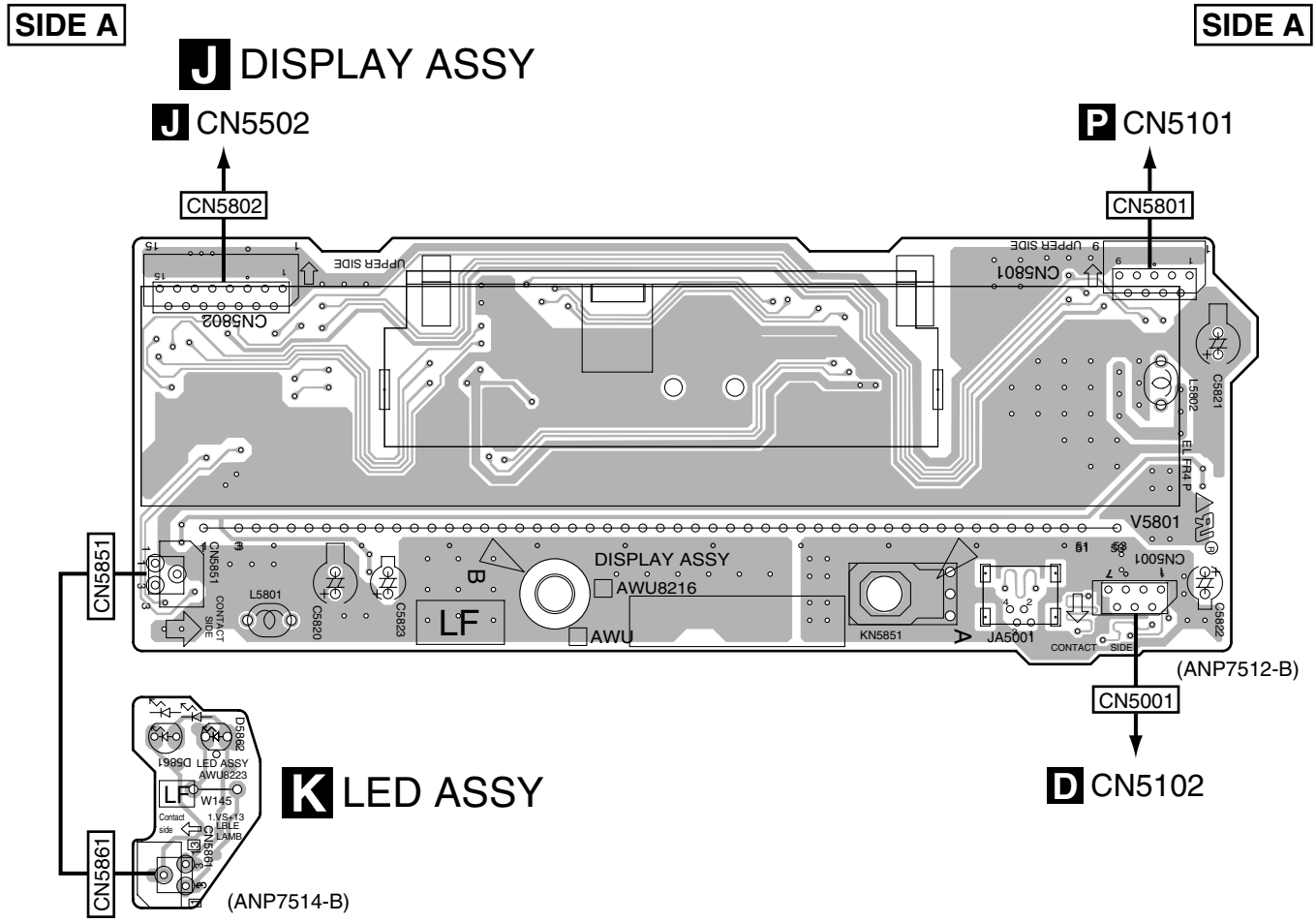



SIDE B

I REG ASSY



## 4.8 DISPLAY and LED ASSYS

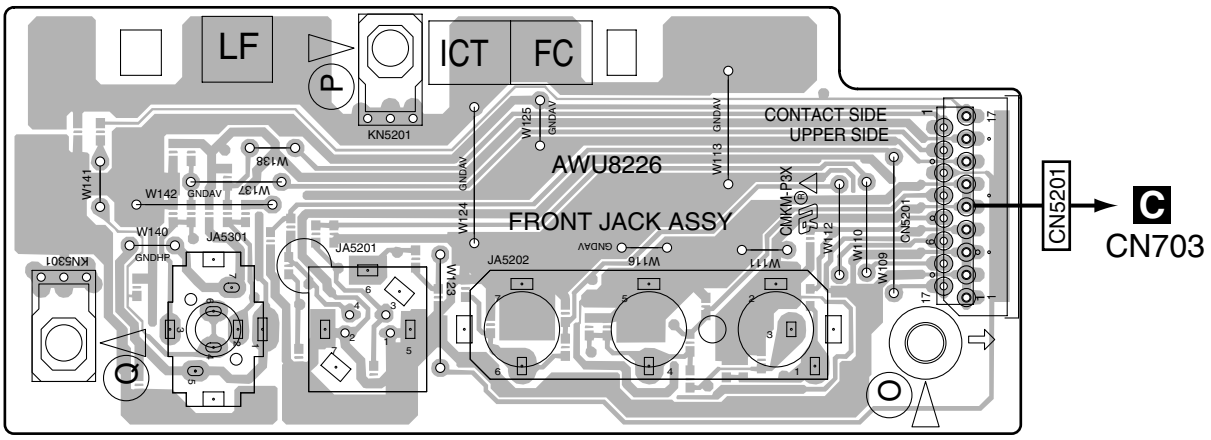


## 4.9 FRONT JACK ASSY

**SIDE A** **SIDE A**

A

### M FRONT JACK ASSY



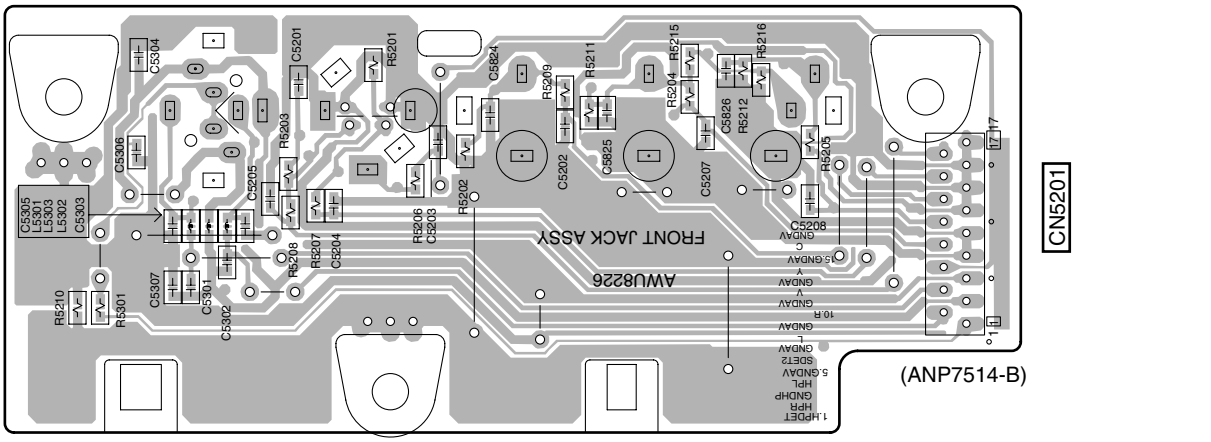

(ANP7514-B)

C

**SIDE B** **SIDE B**

D

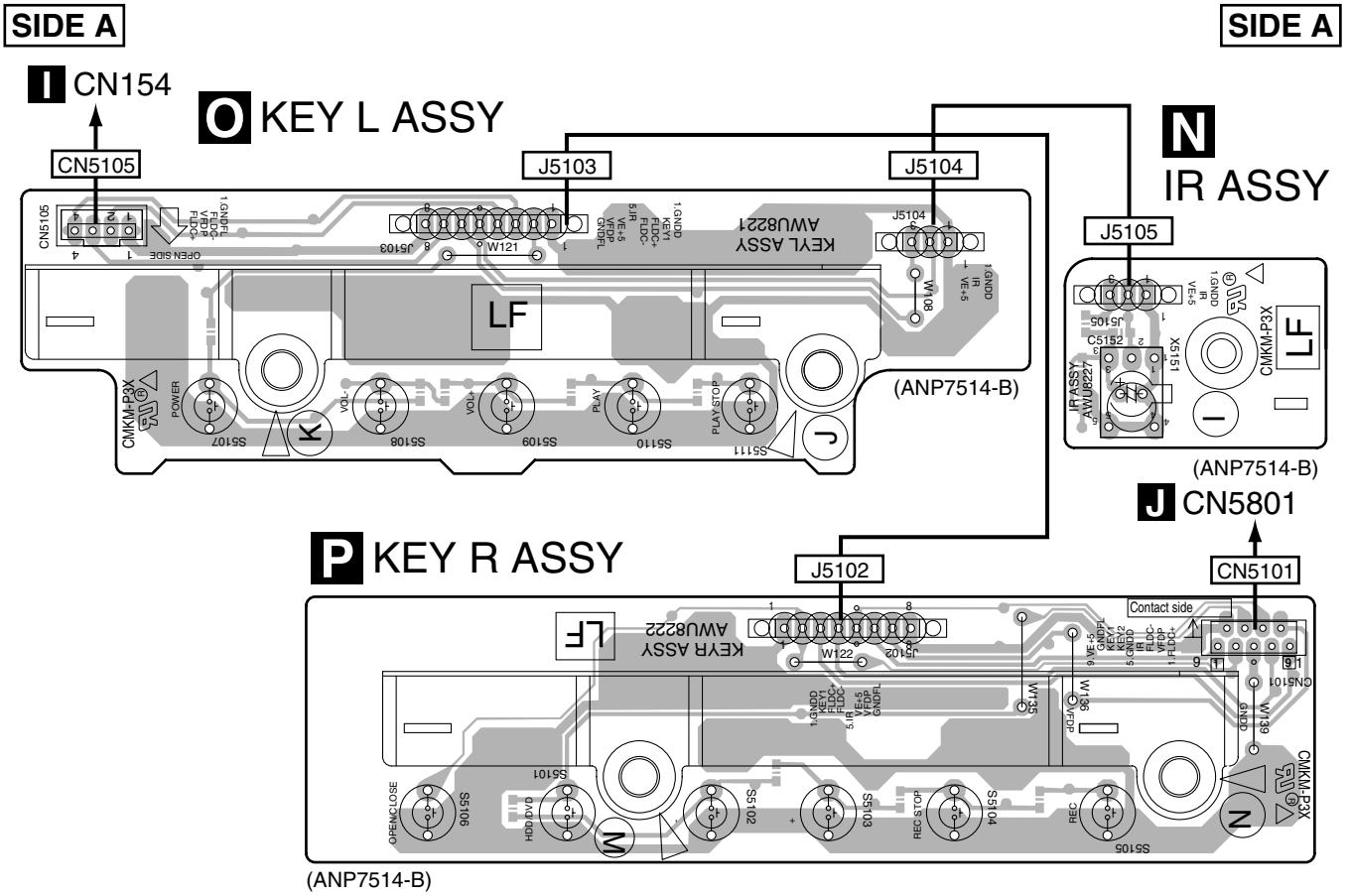
### M FRONT JACK ASSY

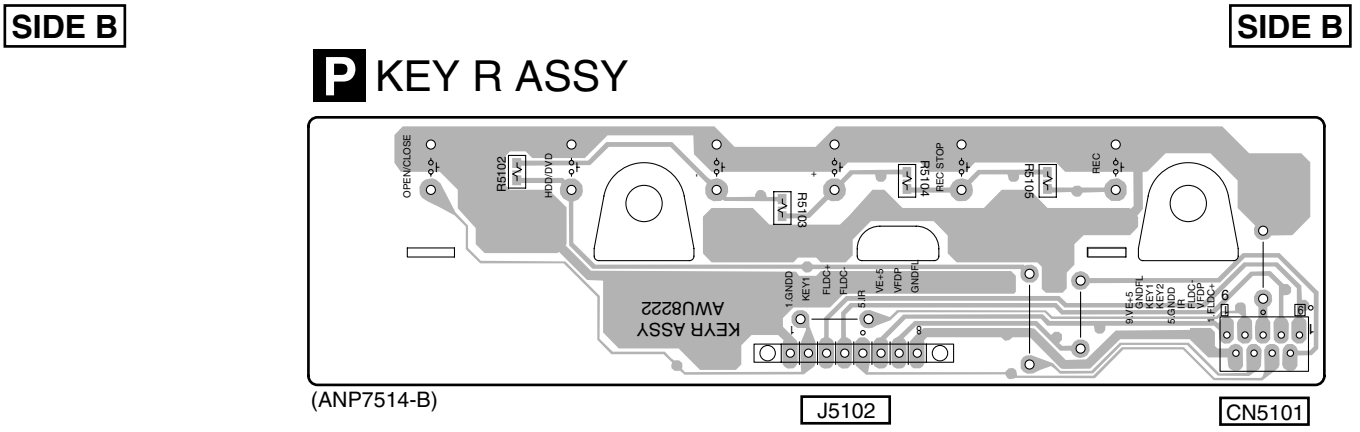


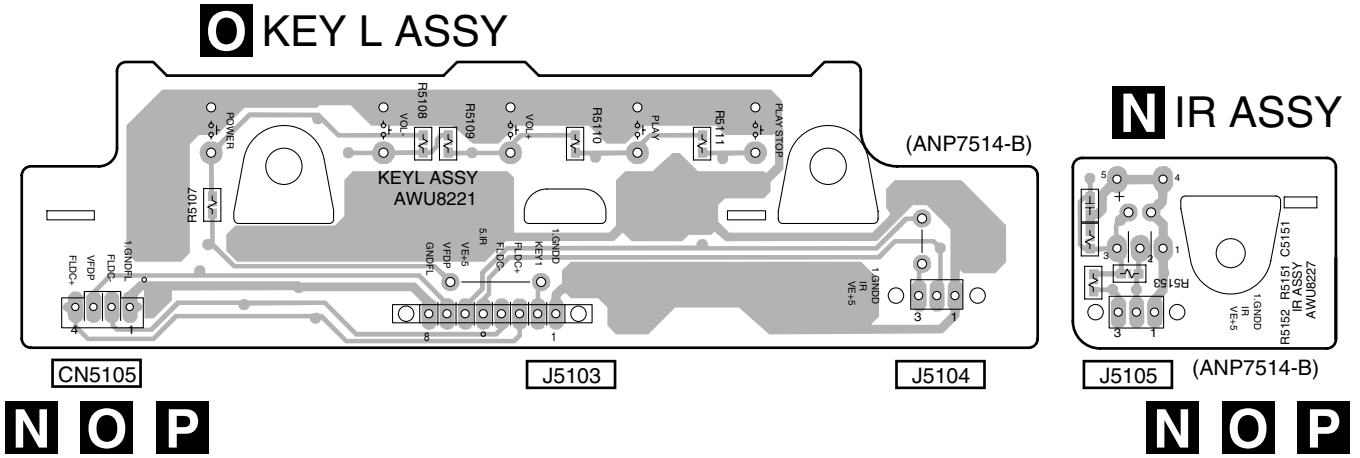

(ANP7514-B)

F

## 4.10 IR, KEY L and KEY R ASSYS

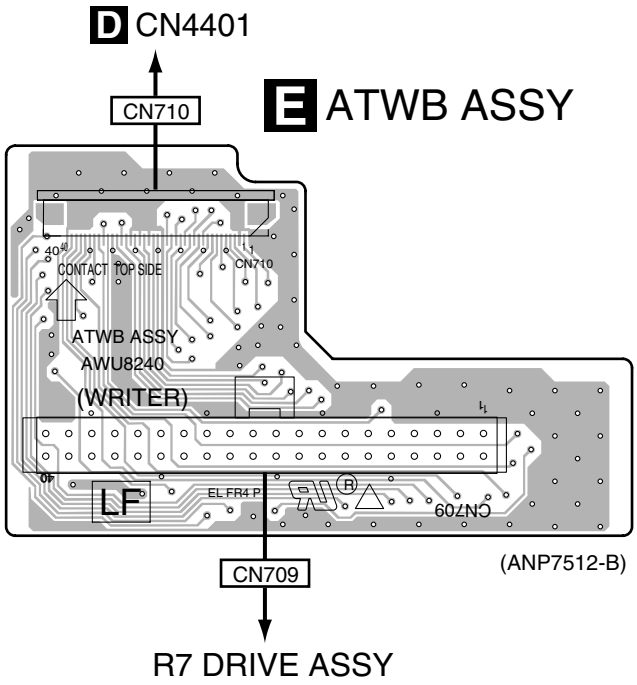


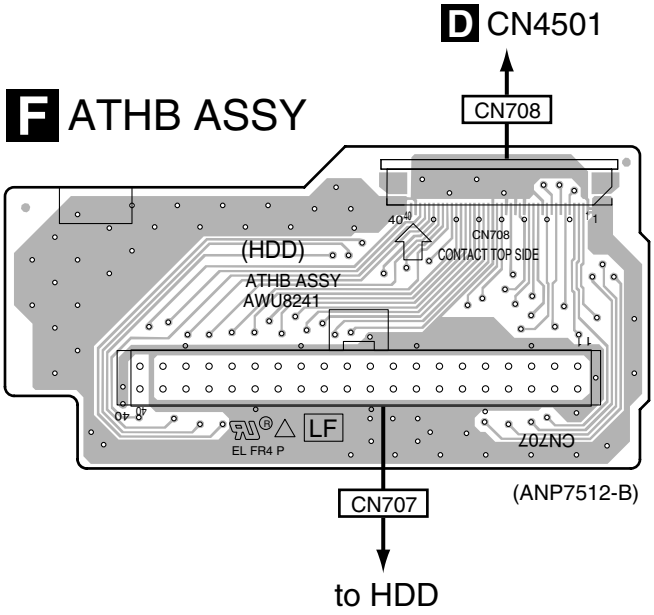



## 4.11 ATWB and ATHB ASSYS

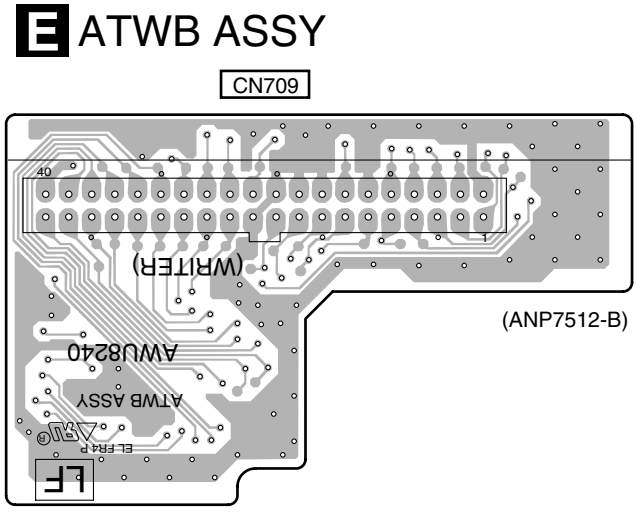
**SIDE A**



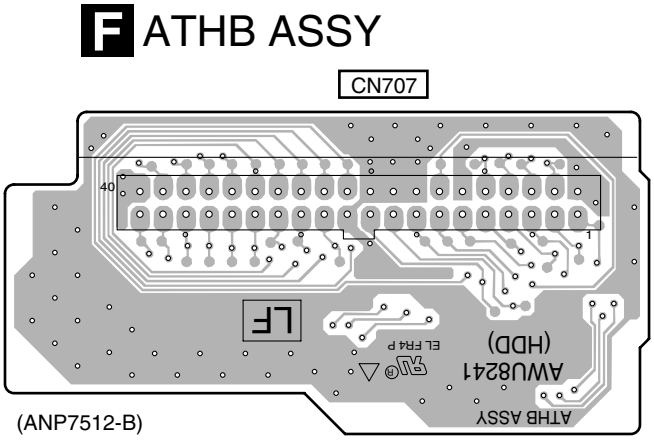

**SIDE A**




**SIDE B**




**SIDE B**




**E F**

**E F**

# 5. PCB PARTS LIST

*NOTES:* ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
*Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).*

| | | | |
|---|---|---|---|
| *560 Ω* | → *56 x 10¹* → | *561* | *RD1/4PU 5 6 1 J* |
| *47k Ω* | → *47 x 10³* → | *473* | *RD1/4PU 4 7 3 J* |
| *0.5 Ω* | → *R50* | | *RN2H R 5 0 K* |
| *1 Ω* | → *1R0* | | *RS1P 1 R 0 K* |

*Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).*

| | | | |
|---|---|---|---|
| *5.62k Ω* | → *562 x 10¹* → | *5621* | *RN1/4PC 5 6 2 1 F* |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **LIST OF ASSEMBLIES** | | | |
| | 1 | ..DVD CONTROL ASSY | AWM7914 |
| | 2 | ..CONTROL ASSY | AWU8202 |
| | 2 | ..TV CONNECT ASSY | AWU8203 |
| | 1 | ..JACK ASSY | AWM7922 |
| | 2 | ..JACK ASSY | AWU8215 |
| | 2 | ..DISPLAY ASSY | AWU8216 |
| | 2 | ..TV MODULE ASSY | AWU8217 |
| | 2 | ..ATWB ASSY | AWU8240 |
| | 2 | ..ATHB ASSY | AWU8241 |
| | 1 | ..COMPLEX ASSY | AWM7924 |
| | 2 | ..KEY L ASSY | AWU8221 |
| | 2 | ..KEY R ASSY | AWU8222 |
| | 2 | ..LED ASSY | AWU8223 |
| | 2 | ..TRADE ASSY | AWU8224 |
| | 2 | ..REG ASSY | AWU8225 |
| | 2 | ..FRONT JACK ASSY | AWU8226 |
| | 2 | ..IR ASSY | AWU8227 |
| | 1 | ..DSP ASSY | AWX8486 |
| | 1 | ..MAIN ASSY | VWV2013 |
| ⚠ | 1 | ..POWER SUPPLY UNIT | AWR7013 |
| | 1 | ..FM/AM TUNER UNIT | AXX7170 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **A TV MODULE ASSY** | | | |
| **SEMICONDUCTORS** | | | |
| | | IC302 | TDA9818TS |
| | | Q302,Q308,Q319 | 2SA1576A |
| | | Q300,Q304,Q306,Q307 | 2SC4081 |
| | | Q310,Q312 | 2SC4082 |
| | | Q305,Q315 | DTA124EUA |
| | | Q311 | RN1903 |
| | | Q301 | RN4903 |
| | | Q303,Q313 | UMF21N |
| | | D300 | 1SS355 |
| | | D302 | 1SS356 |
| | | D301 | UDZS33(B) |
| **COILS AND FILTERS** | | | |
| | | L304 RADIAL INDUCTOR | ATH1109 |
| | | L315 VCO COIL | ATL7011 |
| | | L301,L303,L306 | CTF1399 |
| | | L316 | LCKAW330J2520 |
| | | L305 | LCKAWR22J2520 |
| | | L311,L314 | LCKAWR47J2520 |
| | | L307 | LCYA150J2520 |
| | | L309 | LCYAR68J2520 |
| | | F306 SAW FILTER | VTF1177 |
| | | F305 SAW FILTER | VTF1179 |
| | | F304 IF TRAP FILTER | VTF1180 |
| | | F303 IF TRAP FILTER | VTF1181 |
| | | F301 TRAP FILTER | VTF1183 |
| | | L391,L392 CHIP BEADS | VTL1081 |
| **CAPACITORS** | | | |
| | | C333,C345 | CCSRCH150J50 |
| | | C339 | CCSRCH220J50 |
| | | C343 | CCSRCH270J50 |
| | | C315,C316 | CCSRCH330J50 |
| | | C325 | CCSRCH7R0D50 |
| | | C344 | CCSRUJ4R0C50 |
| | | C301,C346 | CEAT100M50 |
| | | C319 | CEAT101M16 |
| | | C308 | CEAT102M6R3 |
| | | C303 | CEAT330M25 |
| | | C313,C324 | CEAT471M6R3 |
| | | C336,C337 | CKSQYB225K10 |
| | | C332,C334,C335,C340,C341 | CKSRYB102K50 |
| | | C322,C323,C327 | CKSRYB103K50 |
| | | C329,C349 | CKSRYB104K16 |
| | | C304,C305,C328,C331 | CKSRYB222K50 |
| | | C338 | CKSRYB224K10 |
| | | C307,C326,C330 | CKSRYF104Z25 |
| | | C311 | CKSRYF104Z50 |
| **RESISTORS** | | | |
| | | R399 | RS1/10S0R0J |
| | | R305 | RS1/10S150J |
| | | VR300 (10k) | VCP1156 |
| | | Other Resistors | RS1/16S###J |
| **OTHERS** | | | |
| | | 300 SCREW PLATE | VNE1948 |
| | | U301 TV TUNER PACK | VXF1023 |
| | | CN300 19P SOCKET | XKP3080 |
| **B TV CONNECT ASSY** | | | |
| **SEMICONDUCTORS** | | | |
| ⚠ | | IC451 | BA06FP |
| | | IC5701 | BU1924F |

| Mark No. | Description | Part No. |
|---|---|---|
| IC401 | | MSP3417G |
| Q401,Q404-Q406 | | 2SA1576A |
| Q402,Q403 | | 2SC4081 |
| Q400 | | 2SD1664 |
| D400 | | 1SS355 |

**COILS AND FILTERS**

| | | |
|---|---|---|
| L400 | | CTF1399 |
| L402,L403 | | LCYA150J2520 |
| L404 | | LCYA4R7J2520 |
| L401 | | LCYA8R2J2520 |

**CAPACITORS**

| | | |
|---|---|---|
| C424 | | CCSRCH121J50 |
| C431 | | CCSRCH181J50 |
| C439,C440 | | CCSRCH220J50 |
| C5709,C5710 | | CCSRCH270J50 |
| C5712 | | CCSRCH271J50 |
| C423 | | CCSRCH470J50 |
| C426,C428 | | CCSRCH560J50 |
| C5713 | | CCSRCH561J50 |
| C427 | | CCSRCH5R0C50 |
| C430 | | CCSRCH680J50 |
| C432 | | CCSRCH6R0D50 |
| C452,C453,C5711 | | CEAL100M50 |
| C400,C401,C403,C406,C415 | | CEAL101M16 |
| C5707 | | CEAL470M16 |
| C416 | | CEAT100M50 |
| C412,C417 | | CEAT101M16 |
| C408 | | CEJQ100M50 |
| C410 | | CEJQ3R3M50 |
| C421,C433,C434,C442 | | CKSRYB102K50 |
| C414,C435,C436,C5708 | | CKSRYB103K50 |
| C402,C404,C405,C407,C409 | | CKSRYB104K25 |
| C411,C413,C418,C422,C425 | | CKSRYB104K25 |
| C429,C438 | | CKSRYB104K25 |
| C419,C420 | | CKSRYB472K50 |

**RESISTORS**

| | | |
|---|---|---|
| R406,R407 | | RS1/10S0R0J |
| R402 | | RS1/10S100J |
| R451 | | RS1LMF3R3J |
| Other Resistors | | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| X400 | CERAMIC RESONATOR (18.432MHz) | VSS1189 |
| X5701 | CRYSTAL RESONATOR | ASS7004 |
| CN361,CN471 | 19P CONNECTOR | VKN1775 |
| KN401 | WRAPPING TERMINAL | VNF1084 |
| CN351 | 19P PLUG | XKP3069 |

## C JACK ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| IC202 | | BA178M09FP |
| IC651 | | BA4558F-HT |
| IC201 | | LA7213 |
| IC501 | | LA73026AV |
| IC701 | | LA73033M |
| IC601 | | LC75342M |
| IC206-IC208 | | MM1501XN |
| IC702 | | MM1504XN |
| IC503 | | MM1511XN |
| IC203 | | TA1287FG |
| IC502,IC504 | | TC7W53FU |
| IC205 | | TC7WH123FU |
| Q203,Q205-Q207,Q501 | | 2SA1576A |
| Q703,Q704,Q706,Q805 | | 2SA1576A |
| Q781 | | 2SA1577 |
| Q785 | | 2SC1740S |
| Q503-Q505,Q508,Q513 | | 2SC4081 |
| Q783 | | 2SC4097 |
| Q204,Q509,Q514 | | DTA124EUA |
| Q201,Q506,Q512,Q782 | | DTC124EUA |
| Q601,Q602 | | DTC643TU |
| Q702 | | HN1B04FU |
| Q510,Q511 | | HN1C03FU |
| Q202 | | RN2903 |
| Q502,Q784 | | RN4903 |
| D502-D511,D533,D581-D586 | | 1SS355 |
| D782 | | 1SS355 |
| D512,D514-D532,D704-D706 | | DF3A5.6FU |
| D501 | | RB501V-40 |
| D781 | | UDZS12(B) |

**COILS AND FILTERS**

| | | |
|---|---|---|
| L701,L702,L704 | | LAU220J |
| L703 | | LAU2R2J |
| L201 | | LCYA220J2520 |

**SWITCHES AND RELAYS**

| | | |
|---|---|---|
| RY501 | | VSR1017 |

**CAPACITORS**

| | | |
|---|---|---|
| C217,C219,C623-C625,C737 | | CCSRCH101J50 |
| C509,C510,C515,C516 | | CCSRCH102J25 |
| C741,C746,C751 | | CCSRCH180J50 |
| C525,C526 | | CCSRCH220J50 |
| C214,C215,C557,C559 | | CCSRCH221J50 |
| C742,C747,C752 | | CCSRCH390J50 |
| C738 | | CCSRCH470J50 |
| C503,C504,C507,C508 | | CCSRCH471J50 |
| C513,C514,C519,C520 | | CCSRCH471J50 |
| C545,C546,C549,C550 | | CCSRCH471J50 |
| C603,C604,C643,C644 | | CCSRCH471J50 |
| C749 | | CCSRCH680J50 |
| C641,C642 | | CCSRCH821J50 |
| C529,C530,C533-C536 | | CEANP100M16 |
| C221-C223,C226-C228 | | CEAT100M50 |
| C607-C610,C613-C618 | | CEAT100M50 |
| C635,C636,C639,C640,C787 | | CEAT100M50 |
| C220,C229,C234,C235,C552 | | CEAT101M10 |
| C711,C713,C720,C722,C783 | | CEAT101M10 |
| C225,C230,C537,C539,C541 | | CEAT101M16 |
| C619,C621,C651,C652,C789 | | CEAT101M16 |
| C792 | | CEAT101M16 |
| C522,C523,C728-C730 | | CEAT102M6R3 |
| C528 | | CEAT1R0M50 |
| C501,C502,C505,C506 | | CEAT220M25 |
| C511,C512,C517,C518,C786 | | CEAT220M25 |
| C739 | | CEAT220M50 |
| C561 | | CEAT221M16 |
| C212 | | CEAT3R3M50 |
| C521,C524,C527,C531,C532 | | CKSRYB103K50 |

| Mark No. | Description | Part No. |
|---|---|---|
| | C554 | CKSRYB103K50 |
| | C201-C207,C209,C213,C216 | CKSRYB104K25 |
| | C218,C236-C238,C547,C551 | CKSRYB104K25 |
| | C553,C556,C558,C620,C622 | CKSRYB104K25 |
| | C653,C654,C701,C702 | CKSRYB104K25 |
| | C704-C710,C714,C718,C721 | CKSRYB104K25 |
| | C723-C727,C731,C733,C734 | CKSRYB104K25 |
| | C782,C785,C788,C791 | CKSRYB104K25 |
| | C540,C542,C555,C735,C736 | CKSRYB105K10 |
| | C538 | CKSRYB224K16 |
| **RESISTORS** | | |
| | R231 | RS1/16S1001F |
| | R233,R241 | RS1/16S1201F |
| | R553,R569 | RS1/16S1500F |
| | R235 | RS1/16S1801F |
| | R237,R239 | RS1/16S2001F |
| | R242 | RS1/16S2200F |
| | R723,R726,R730 | RS1/16S6800F |
| | R533,R534,R536,R539,R548 | RS1/16S75R0F |
| | R573-R575,R710-R712,R729 | RS1/16S75R0F |
| | Other Resistors | RS1/16S###J |
| **OTHERS** | | |
| | CN703 17P FFC CONNECTOR | 52044-1745 |
| | JA501,JA502 RGB CONNECTOR | AKB7157 |
| | JA702 4P PIN JACK | AKB7170 |
| | CN702 CONNECTOR POST 10P | S10B-PH-K |
| | CN706 CONNECTOR POST 4P | S4B-PH-K-R |
| | CN701 32P FFC CONNECTOR | VKN1815 |
| | KN781,KN782 WRAPPING TERMINAL | VNF1084 |
| | CN704,CN705 23P PLUG | XKP3071 |

## D MAIN ASSY

**SEMICONDUCTORS**

| Mark No. | Description | Part No. |
|---|---|---|
| | IC3101 | AK5357VT |
| | IC2301 | BA7655AF |
| | IC1103 | CY62148VLL-70ZI |
| | IC5204 | K4S161622D-TC80 |
| | IC1101 | K4S281632E-TC75 |
| | IC1401,IC1421 | K4S561632E-TC75 |
| | IC1001 | M65673WG-A |
| | IC5002 | MM1562FF |
| ⚠ | IC4007 | MM1603DP |
| | IC1301 | MT48LC4M32B2TG-7 |
| ⚠ | IC4004,IC4006 | NJM2872F05 |
| | IC4206,IC5301,IC5321 | NJU7013F |
| | IC3201 | PCM1742KE |
| ⚠ | IC4008 | PQ015YZ01ZP |
| ⚠ | IC4002 | PQ070XZ02ZP |
| | IC4003 | PST3428U |
| | IC4005 | PST3809U |
| | IC3301 | SM5950AM |
| | IC3402 | SM8707KV |
| | IC2211,IC2302,IC4101 | SN74AHC2G53HDCT |
| | IC3001 | TC74LCX541FT |
| | IC3002 | TC74VHC14FT |
| | IC5341 | TC74VHC157FT |
| | IC1104 | TC7SZ126FU |
| | IC3403,IC4205,IC5322 | TC7WHU04FU |
| | IC3251 | UPC4570G2-A |
| | IC5101 | UPD72852AGB-8EU-A |
| | IC5202 | UPD72893BGD-LML |
| | IC1102 | VYW2176 |
| | IC1201 | W986416DH-6 |
| | Q2101-Q2105,Q2201,Q2203,Q2301 | 2SA1576A |
| | Q2312 | 2SA1576A |
| | Q4000 | 2SC2411K |
| | Q2202,Q2222,Q2241 | 2SC4081 |
| | Q2302,Q2311 | DTC114EUA |
| | Q2402,Q2403 | HN1B04FU |
| | Q3201,Q3202 | RN1903 |
| | Q1102 | RN4982 |
| | Q2001 | UMF21N |
| | D3001,D3101-D3104 | 1SS355 |
| | D5321 | HVC359 |
| | D5322 | HVC362 |
| | D4201 | MA2ZV05 |
| | D3002 | RB501V-40 |
| | D1111 | RB521S-30 |

**COILS AND FILTERS**

| | | |
|---|---|---|
| | F3102,F3401-F3403,F4201,F5101 | DTF1069 |
| | L1001-L1009,L1101,L1102,L1301 | DTL1106 |
| | L1401,L1402,L3301,L5501-L5505 | DTL1106 |
| | L5507,L5508 EMI FILTER | DTL1106 |
| | L5301,L5321 | LCYA100J2520 |
| | L4202 | LCYA1R2J2520 |
| | F3201 | VTF1096 |
| | L2101 | VTL1067 |
| | L4201 | VTL1079 |
| | L5103-L5106 | VTL1082 |

**CAPACITORS**

| | | |
|---|---|---|
| | C5311,C5329 | CCSRCH100D50 |
| | C3253,C3258 | CCSRCH101J50 |
| | C4208 | CCSRCH240J50 |
| | C5105 | CCSRCH271J50 |
| | C5325,C5327 | CCSRCH330J50 |
| | C3207 | CCSRCH331J50 |
| | C5131-C5138 | CCSRCH4R0C50 |
| | C5326 | CCSRCH5R0C50 |
| | C3254,C3257 | CCSRCH681J50 |
| | C5121,C5122 | CCSRCH8R0D50 |
| | C2208,C2317,C4034,C5322 | CEVW100M16 |
| | C3251,C3255,C4001,C4002,C4004 | CEVW101M16 |
| | C4029,C4037 | CEVW101M16 |
| | C2101,C2221,C2405,C3201,C3204 | CEVW101M6R3 |
| | C3206 | CEVW101M6R3 |
| | C2301 | CEVW220M6R3 |
| | C1061,C4022 | CEVW221M4 |
| | C3106 | CEVW2R2M50 |
| | C5321 | CEVW470M16 |
| | C2308,C3102,C3107,C4003,C5341 | CEVW470M6R3 |
| | C5301 | CEVW4R7M35 |
| | C2220,C2243 | CEVWNP100M10 |
| | C1031,C1032,C1503-C1506 | CKSQYB104K16 |
| | C2204,C4206,C5309 | CKSQYB105K10 |
| | C1901,C4014,C4019,C4033,C5006 | CKSQYB225K10 |
| | C1004,C1012,C1014,C1029,C1034 | CKSRYB102K50 |
| | C1040,C1044,C1049,C1051 | CKSRYB102K50 |
| | C1110,C1111,C1207,C1208,C1307 | CKSRYB102K50 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | C1311,C1313,C1407,C1408 | | CKSRYB102K50 |
| | C1427,C1428,C3303,C3408 | | CKSRYB102K50 |
| A | C1003,C1027,C1037,C1052,C1109 | | CKSRYB103K50 |
| | C1206,C1305,C1308,C1310,C1406 | | CKSRYB103K50 |
| | C1425,C2305,C3003,C3004,C4018 | | CKSRYB103K50 |
| | C4020,C4207,C5214,C5222,C5224 | | CKSRYB103K50 |
| | C1508-C1510,C2311,C4104,C5306 | | CKSRYB104K16 |
| | C4103 | | CKSRYB223K50 |
| | C5328 | | CKSRYB473K25 |
| | C2202 | | CKSRYB563K16 |
| | C1002,C1005,C1007-C1010,C1016 | | CKSRYF104Z25 |
| | C1018,C1019,C1021-C1023 | | CKSRYF104Z25 |
| | C1025,C1026,C1028,C1030,C1035 | | CKSRYF104Z25 |
| B | C1038,C1041,C1042,C1047,C1102 | | CKSRYF104Z25 |
| | C1105,C1106,C1108,C1114,C1202 | | CKSRYF104Z25 |
| | C1204,C1302,C1304,C1312,C1402 | | CKSRYF104Z25 |
| | C1404,C1422,C1424,C2102-C2106 | | CKSRYF104Z25 |
| | C2201,C2206,C2210,C2222,C2241 | | CKSRYF104Z25 |
| | C2302,C2306,C2319,C2406,C2407 | | CKSRYF104Z25 |
| | C3101,C3105,C3108,C3202,C3203 | | CKSRYF104Z25 |
| | C3205,C3252,C3256,C3302 | | CKSRYF104Z25 |
| | C4006-C4008,C4010,C4012,C4013 | | CKSRYF104Z25 |
| | C4017,C4021,C4024-C4026,C4032 | | CKSRYF104Z25 |
| | C4202,C4203,C4209,C5113,C5118 | | CKSRYF104Z25 |
| C | C5120,C5125-C5127,C5204,C5215 | | CKSRYF104Z25 |
| | C5218,C5225-C5228,C5230,C5308 | | CKSRYF104Z25 |
| | C5310,C5323,C5342,C5343 | | CKSRYF104Z25 |
| | C1001,C1006,C1048,C1103,C1107 | | CKSRYF105Z10 |
| | C1203,C1205,C1209,C1303,C1306 | | CKSRYF105Z10 |
| | C1309,C1403,C1405,C1409,C1423 | | CKSRYF105Z10 |
| | C1426,C1429,C3001,C3006 | | CKSRYF105Z10 |
| | C3404-C3407,C4027,C4030,C4105 | | CKSRYF105Z10 |
| | C4107,C4201,C4401,C4501,C5110 | | CKSRYF105Z10 |
| | C4028 | | DCH1200 |
| | C3402,C3403,C4015 | | VCG1045 |
| D | C1054,C1060,C3301 (150/4V) | | VCH1234 |
| | VC4201 (10pF) | | VCM1012 |

**RESISTORS**

| | | |
|---|---|---|
| R1025,R1026,R1042-R1046 | | RAB4CQ103J |
| R1048-R1051,R1054,R1068,R1069 | | RAB4CQ103J |
| R1072,R1073,R5218-R5221 | | RAB4CQ103J |
| R5229,R5230,R5247,R5249-R5252 | | RAB4CQ103J |
| R5255,R5258,R5259,R5273-R5275 | | RAB4CQ103J |
| R5289,R5290 | | RAB4CQ103J |
| R1408-R1411 | | RAB4CQ220J |
| R4401,R4404,R4410,R4416,R4417 | | RAB4CQ223J |
| R4423,R4502,R4506,R4512 | | RAB4CQ223J |
| R4518,R4519,R4525 | | RAB4CQ223J |
| R1114-R1117,R4405-R4408,R4436 | | RAB4CQ330J |
| R4507-R4510,R4538 | | RAB4CQ330J |
| R1303-R1310,R1404-R1407 | | RAB4CQ560J |
| R1423-R1426 | | RAB4CQ560J |
| R1203-R1206 | | RAB4CQ680J |
| R3254,R3266 | | RN1/16SE1002D |
| R3253,R3265 | | RN1/16SE1201D |
| R3251,R3269 | | RN1/16SE2202D |
| R5103 | | RN1/16SE5101D |
| R5108 | | RN1/16SE9101D |
| R1207,R1502,R1507,R2017,R3002 | | RS1/10S0R0J |
| R3102,R3201,R3252,R4001,R4006 | | RS1/10S0R0J |
| R4009,R4014,R4016,R4108,R4109 | | RS1/10S0R0J |
| R5209,R5322 | | RS1/10S0R0J |
| R4019 | | RS1/10S1001D |
| R5321 | | RS1/10S101J |
| R1501 | | RS1/10S2202F |
| R4020 | | RS1/10S5600D |
| R1031,R1032,R1034,R4105-R4107 | | RS1/16S0R0J |
| R4201,R5130,R5141-R5144,R5248 | | RS1/16S0R0J |
| R5295,R5328 | | RS1/16S0R0J |
| R4013 | | RS1/16S1001F |
| R4005 | | RS1/16S101J |
| R5272 | | RS1/16S102J |
| R4012 | | RS1/16S1200F |
| R4011 | | RS1/16S1501F |
| R1022 | | RS1/16S151J |
| R1024 | | RS1/16S181J |
| R1021,R1023 | | RS1/16S2201F |
| R3408 | | RS1/16S220J |
| R2105,R2106,R2111,R2112,R2115 | | RS1/16S3300F |
| R4018 | | RS1/16S3600D |
| R5240-R5243,R5296,R5341,R5342 | | RS1/16S470J |
| R5104-R5107 | | RS1/16S56R0D |
| R3026 | | RS1/16S681J |
| Other Resistors | | RS1/16SS###J |

**OTHERS**

| | |
|---|---|
| CN5102 7P FFC CONNECTOR | VKN1411 |
| CN4401,CN4501 40P FFC CONNECT0R | VKN1811 |
| CN1901 7P FFC CONNECTOR | VKN1812 |
| CN4001 8P FFC CONNECTOR | VKN1813 |
| CN3001 24P FFC CONNECTOR | VKN1814 |
| CN2001 32P FFC CONNECTOR | VKN1815 |
| KN3 EARTH METAL FITTING | VNF1109 |
| X4201 CRYSTAL RESONATOR (27.000MHz) | VSS1146 |
| X5101 CRYSTAL RESONATOR (24.576MHz) | VSS1184 |
| X4102 VCXO (27MHz) | VSS1195 |

## E ATWB ASSY

**OTHERS**

| | |
|---|---|
| CN709 40P ATA CONECTOR | VKN1816 |
| CN710 40P FFC CONNECTOR | VKN1879 |

## F ATHB ASSY

**OTHERS**

| | |
|---|---|
| CN707 40P ATA CONECTOR | VKN1816 |
| CN708 40P FFC CONNECTOR | VKN1879 |

## G CONTROL ASSY

**SEMICONDUCTORS**

| | |
|---|---|
| ⚠ IC901 | BA178M05FP |
| ⚠ IC6001 | BA178M09FP |
| IC8301-IC8303,IC8401,IC8501-IC8506 | BA4558F-HT |
| IC8652 | BA4558F-HT |
| IC3901 | BD3812F |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | IC804 | | BR24L32F-W |
| | IC2001 | | BU4052BCF |
| | IC8402 | | BU4066BCF |
| | IC2002 | | NJM4558MD |
| | IC3902 | | NJM4560M |
| | IC5501 | | PDC117B |
| | IC801 | | PEG014A |
| | IC803 | | PST3245 |
| | IC802 | | RS5C372A |
| | IC805 | | TC74HCT7007AF |
| | IC5901 | | TC7WH08FU |
| | IC950 | | TC7WU04FU |
| | Q5901 | | 2SA1037K |
| | Q3907,Q5624 | | 2SA1576A |
| ⚠ | Q5652 | | 2SB1238X |
| | Q5503 | | 2SB1689 |
| | Q2001-Q2004,Q5501,Q5504 | | 2SC4081 |
| | Q5621-Q5623,Q5653,Q6001 | | 2SC4081 |
| | Q801,Q802,Q951 | | 2SC4081 |
| | Q3901-Q3904,Q805,Q808 | | 2SD2114K |
| | Q2009,Q2010,Q803,Q807,Q950 | | DTA124EUA |
| | Q804,Q806,Q911 | | DTC124EUA |
| | Q952 | | HN1C01FU |
| | Q901 | | RN4903 |
| | Q2005,Q2007,Q8321,Q8404,Q8406 | | UN5112 |
| | Q5502,Q8405,Q8407 | | UN5212 |
| | D5653 | | 1SR154-400 |
| | D3903,D5521,D5901-D5905 | | 1SS355 |
| | D802-D804,D8301,D990-D995 | | 1SS355 |
| | D2003,D2005 | | DAP202K |
| | D801 | | RB501V-40 |
| | D5621 | | UDZS3R0(B) |
| | D2001,D2002 | | UDZS6R2(B) |
| | D3901,D3902 | | UDZS6R8(B) |
| | D5502-D5508,D5510-D5513 | | UDZS8R2(B) |

## COILS AND FILTERS

| | | |
|---|---|---|
| | L5651 CHIP COIL | LCKAW100J2520 |
| | L5501 | LFEA220J |
| | L950 | LFEA470J |
| | L5652 | LTA102J |
| | L5901 CHIP SOLID INDUCTOR | QTL1013 |
| | L4602,L4603 CHIP BEADS | VTL1076 |
| | L801 CHIP BEADS | VTL1081 |

## CAPACITORS

| | | |
|---|---|---|
| | C5528 | ACH1246 |
| | C951 | CCSRCH100D50 |
| | C3909,C3910,C5509,C5510,C808 | CCSRCH101J50 |
| | C812,C813,C816 | CCSRCH101J50 |
| | C806 | CCSRCH120J50 |
| | C907,C908 | CCSRCH180J50 |
| | C5503,C5504,C958,C959 | CCSRCH220J50 |
| | C5651 | CCSRCH221J50 |
| | C8301,C8302 | CCSRCH331J50 |
| | C3911,C3912,C811,C814,C815 | CCSRCH470J50 |
| | C956 | CCSRCH561J50 |
| | C8307,C8308 | CCSRCH680J50 |
| | C8303,C8304,C8337,C8338,C8357 | CCSRCH821J50 |
| | C3924 | CEAL100M16 |
| | C2001,C2002,C2009,C2010,C911 | CEAL100M50 |
| | C955 | CEAL100M50 |
| | C2007,C2008,C6012 | CEAL470M16 |
| | C3903,C3904 | CEANP101M16 |
| | C3915-C3918,C8309,C8310 | CEAT100M50 |
| | C8313,C8314,C8341,C8342 | CEAT100M50 |
| | C8361,C8362,C8537,C8538 | CEAT100M50 |
| | C8651,C8652,C8657,C8658 | CEAT100M50 |
| | C4604,C4611,C5657 | CEAT101M16 |
| | C6010 | CEAT1R0M50 |
| | C3905,C3906,C3913,C3914 | CEAT470M16 |
| | C3931,C3932 | CEAT470M16 |
| | C5655 | CEAT471M16 |
| | C5516,C5524,C5527,C817,C835 | CEHAZA101M10 |
| | C843 | CEHAZA101M10 |
| | C3901,C3902,C5512,C5909 | CKSRYB102K50 |
| | C2003-C2006,C5502,C5505,C5506 | CKSRYB103K50 |
| | C5508,C5525,C8311,C8312 | CKSRYB103K50 |
| | C8339,C8340,C8359,C8360 | CKSRYB103K50 |
| | C8402,C8403,C8407,C8408,C841 | CKSRYB103K50 |
| | C8505-C8512,C8517-C8524 | CKSRYB103K50 |
| | C8529-C8536,C8659,C8660 | CKSRYB103K50 |
| | C909,C910,C960,C961 | CKSRYB103K50 |
| | C3925,C4601,C4602,C5514,C5521 | CKSRYB104K25 |
| | C5526,C5531,C5653,C5654,C5901 | CKSRYB104K25 |
| | C5904,C6007,C803,C810 | CKSRYB104K25 |
| | C819-C821,C824,C825,C833 | CKSRYB104K25 |
| | C836,C837,C840,C842 | CKSRYB104K25 |
| | C905,C906,C950,C952-C954 | CKSRYB104K25 |
| | C957 | CKSRYB104K25 |
| | C807,C967 | CKSRYB105K10 |
| | C802,C809,C822,C829,C830 | CKSRYB105K6R3 |
| | C834 | CKSRYB105K6R3 |
| | C8331-C8334,C8351,C8353 | CKSRYB152K50 |
| | C8352 | CKSRYB332K50 |
| | C4609,C4610 | CKSRYB473K25 |
| | C8901-C8906 | VCH1241 |

## RESISTORS

| | | |
|---|---|---|
| | R947,R948 | RS1/10S0R0J |
| | R3901-R3912,R3917-R3922 | RS1/10S101J |
| | R8501,R8502,R8505,R8506 | RS1/16S1002F |
| | R8511,R8512,R8515,R8516 | RS1/16S1002F |
| | R8521,R8522,R8525,R8526 | RS1/16S1002F |
| | Other Resistors | RS1/16S###J |

## OTHERS

| | | |
|---|---|---|
| | X5502 CERAMIC RESONATOR (10MHz) | ASS7034 |
| | X803 CRYSTAL OSCILLATOR | CSS1599 |
| | X950 CRYSTAL OSCILLATOR (4.433619MHz) | VSS1176 |
| | X5501,X802 CRYSTAL RESONATOR (32kHz) | VSS1197 |
| | CN5503,CN5504 19P CONNECTOR | 19R-1.25FJ |
| | CN5507 7P FFC CONNECTOR | 52045-0745 |
| | CN805 9P FFC CONNECTOR | 52045-0945 |
| | CN5505 11P FFC CONNECTOR | 52045-1145 |
| | CN8904 12P CONNECTOR | AKP7131 |
| | CN5506 16P SOCKET | AKP7195 |
| | CN5501 16P CONNECTOR | B16B-PH-K |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | | CN5651,CN802 | B2B-PH-K |
| | | CONNECTOR POST 2P | |
| A | | JA4601 OPT. LINK IN | GP1FA513RZB |
| | | JA4602 OPT. LINK OUT 12MB/S | GP1FA513TZ |
| | | BT801 LITHIUM BATTERY (CR2032) | VEM1034 |
| | | CN5502 15P FFC CONNECTOR | VKN1246 |
| | | CN801 24P FFC CONNECTOR | VKN1255 |
| | | ST801 BATTERY SOCKET | VKX1015 |
| | | KN2501 SCREW PLATE | VNE1948 |
| | | KN5501,KN5502 WRAPPING TERMINAL | VNF1084 |
| | | KN801 EARTH METAL FITTING | VNF1109 |
| | | JA5901 MINI JACK(4P) | XKN3015 |
| B | | CN8901 13P PLUG | XKP3066 |
| | | CN8902,CN8903 19P PLUG | XKP3069 |
| | | CN803,CN804 23P PLUG | XKP3071 |

## H DSP ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | IC8201 | AK4114VQ |
| | IC8401 | AK4628VQE |
| | IC8501 | DSPD56367PV150 |
| | IC8901 | NJM2391DL1-33 |
| | IC8902 | NJU7223DL1-18 |
| C | | |
| | IC8701 | TC74LVX244FT |
| | IC8702 | TC74VHCT244AFT |
| | IC8502 | TC7WU04FU |
| | Q8504 | UMD2N |
| | Q8503 | UN5112 |
| | D8501 | 1SS355 |
| | D8401 | DAN202K |
| | D8402,D8502,D8503 | DAP202K |

### COILS AND FILTERS

| | | |
|---|---|---|
| D | L8002,L8004,L8501,L8502 | ATL7002 |
| | L8201,L8203,L8204,L8401,L8402 | QTL1013 |
| | L8504,L8701,L8702 | QTL1013 |

### CAPACITORS

| | | |
|---|---|---|
| | C8217,C8225,C8408 (100/4V) | ACH7231 |
| | C8209,C8210 | CCSRCH100D50 |
| | C8421 | CCSRCH101J50 |
| | C8007,C8008,C8201,C8212,C8214 | CCSRCH471J50 |
| | C8404,C8409-C8414,C8416,C8417 | CCSRCH471J50 |
| | C8419,C8505,C8507,C8509 | CCSRCH471J50 |
| | C8511,C8512,C8515,C8518,C8520 | CCSRCH471J50 |
| E | C8522,C8524,C8526,C8528,C8530 | CCSRCH471J50 |
| | C8532,C8534,C8536,C8539,C8541 | CCSRCH471J50 |
| | C8543,C8545,C8551,C8703,C8706 | CCSRCH471J50 |
| | C8548,C8549 | CCSRCH8R0D50 |
| | C8701,C8704 | CEVW100M16 |
| | C8406,C8415,C8902,C8904 | CEVW101M16 |
| | C8204,C8555 | CKSRYB102K50 |
| | C8009,C8405,C8418,C8517,C8554 | CKSRYB103K50 |
| | C8010,C8202,C8207,C8213,C8215 | CKSRYB104K16 |
| | C8407,C8420,C8422,C8504,C8513 | CKSRYB104K16 |
| | C8521,C8523,C8525,C8527,C8529 | CKSRYB104K16 |
| F | C8531,C8533,C8535,C8537,C8538 | CKSRYB104K16 |
| | C8540,C8542,C8544,C8550,C8702 | CKSRYB104K16 |
| | C8705,C8901,C8903 | CKSRYB104K16 |
| | C8516 | CKSRYB105K6R3 |
| | C8514 | CKSRYB333K16 |
| | C8203 | CKSRYB473K50 |
| | C8546 (150/4V) | VCH1234 |
| | C8547,C8613 (150/4V) | VCH1246 |

### RESISTORS

| | | |
|---|---|---|
| | R8506 | RAB4C101J |
| | R8201 | RS1/16S1802F |
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | X8501 CRYSTAL RESONATOR (20MHZ) | VSS1171 |
| | X8201 CRYSTAL RESONATOR (24.576MHz) | XSS3003 |
| | KN8101 SCREW PLATE | VNE1948 |
| | CN8003 13P SOCKET | XKP3077 |
| | CN8007,CN8011 19P SOCKET | XKP3080 |

## I REG ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | IC152 | BA05FP |
| ⚠ | IC156 | BA178M05FP |
| ⚠ | IC154,IC155 | BA178M09FP |
| | IC151 | NJM78M56FA |
| | IC153 | PQ1K333M2ZP |
| | Q152 | 2SB1237X |
| | Q155,Q156 | 2SC2411K |
| | Q153 | UMF21N |
| | Q158 | UN5112 |
| | Q151,Q157 | UN5212 |
| | D151 | 1SR154-400 |

### CAPACITORS

| | | |
|---|---|---|
| | C154,C158,C171,C181,C185 | CEAT100M50 |
| | C166,C167,C175-C177 | CEAT101M16 |
| | C153,C157,C170,C180,C184 | CEAT1R0M50 |
| | C187 | CEAT221M16 |
| | C162 | CEAT470M50 |
| | C159-C161,C163-C165 | CKSRYB104K25 |
| | C172-C174 | CKSRYB104K25 |

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | CN151 21P FFC CONNECTOR | 52045-2145 |
| | CN153 CONNECTOR 10P | B10B-PH-K |
| | CN152 CONNECTOR 16P | B16B-PH-K |
| | CN154 CONNECTOR 4P | B4B-PH-K |
| | PCB BINDER | VEF1040 |
| | KN101 WRAPPING TERMINAL | VNF1084 |

## J DISPLAY ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | IC5801 | PT6302LQ-003 |
| | Q5801,Q5851,Q5854 | 2SC4081 |
| | D5851 | UDZS3R9(B) |

| Mark No. | Description | Part No. |
|---|---|---|
| **COILS AND FILTERS** | | |
| | L5802 | LFEA100J |
| | L5801 | LFEA220J |
| **CAPACITORS** | | |
| | C5805-C5807 | CCSRCH221J50 |
| | C5811 | CCSRCH470J50 |
| | C5820 | CEJQ101M6R3 |
| | C5822,C5823 | CEJQ1R0M50 |
| | C5821 | CEJQ220M35 |
| | C5808 | CKSRYB102K50 |
| | C5801-C5804,C5810 | CKSRYB223K50 |
| | C5809 | CKSRYB224K10 |
| **RESISTORS** | | |
| | Other Resistors | RS1/16S###J |
| **OTHERS** | | |
| | CN5851 WRAPPING TERMINAL | 52045-0345 |
| | V5801 FL TUBE | AAV7103 |
| | JA5001 DV-TERMINAL | VKB1207 |
| | CN5001 7P FFC CONNECTOR | VKN1238 |
| | CN5801 9P FFC CONNECTOR | VKN1269 |
| | CN5802 15P FFC CONNECTOR | VKN1275 |
| | KN5851 3P FFC CONNECTOR | VNF1084 |
| | 5802 FL HOLDER | VNF1122 |

## K LED ASSY

| | | |
|---|---|---|
| **SEMICONDUCTORS** | | |
| | D5861 | SLR-343BBT(GHJ) |
| **CAPACITORS** | | |
| | C5861 | CKSRYB103K50 |
| **OTHERS** | | |
| | CN5861 3P FFC CONNECTOR | 52045-0345 |

## L TRADE ASSY

| | | |
|---|---|---|
| **OTHERS** | | |
| | CN806-CN809 23P SOCKET | XKP3082 |

## M FRONT JACK ASSY

| | | |
|---|---|---|
| **CAPACITORS** | | |
| | C5207,C5208,C5825,C5826 | CCSRCH471J50 |
| | C5201 | CKSRYB103K50 |
| | C5304 | CKSRYB104K25 |
| | C5301,C5302 | CKSRYB223K50 |
| **RESISTORS** | | |
| | R5201-R5203 | RS1/16S75R0F |
| | Other Resistors | RS1/16S###J |
| **OTHERS** | | |
| | CN5201 17P FFC CONNECTOR | 52044-1745 |
| | JA5301 MINITURE JACK | AKN7005 |
| | JA5201 YC CONNECTOR(VERTICAL) | VKB1190 |
| | JA5202 3PIN JACK(VERTICAL) | VKB1206 |
| | KN5201,KN5301 WRAPPING TERMINAL | VNF1084 |

## N IR ASSY

| | | |
|---|---|---|
| **CAPACITORS** | | |
| | C5152 | CEJQ470M16 |
| | C5151 | CKSRYB223K50 |
| **RESISTORS** | | |
| | Other Resistors | RS1/16S###J |
| **OTHERS** | | |
| | 5105 3P CABLE HOLDER | 51048-0300 |
| | X5151 REMOTE RECEIVER UNIT | SPS-442-E1 |

## O KEY L ASSY

| | | |
|---|---|---|
| **SWITCHES AND RELAYS** | | |
| | S5107-S5111 | VSG1024 |
| **RESISTORS** | | |
| | Other Resistors | RS1/16S###J |
| **OTHERS** | | |
| | 5104 3P CABLE HOLDER | 51048-0300 |
| | 5103 8P CABLE HOLDER | 51048-0800 |
| | CN5105 CONNECTOR 4P | B4B-PH-K |
| | J5202 JUMPER WIRE | D20PYY0305E |

## P KEY R ASSY

| | | |
|---|---|---|
| **SWITCHES AND RELAYS** | | |
| | S5101-S5106 | VSG1024 |
| **RESISTORS** | | |
| | Other Resistors | RS1/16S###J |
| **OTHERS** | | |
| | 5102 8P CABLE HOLDER | 51048-0800 |
| | J5201 JUMPER WIRE | D20PYY0840E |
| | CN5101 9P CONNECTOR | VKN1240 |

## Q POWER SUPPLY UNIT

| | | |
|---|---|---|
| **SEMICONDUCTORS** | | |
| ⚠ | IC402 FUSE 1.5A/125V | AEK7011 |
| ⚠ | IC501 FUSE 1.25A/125V | AEK7048 |
| ⚠ | IC603 FUSE 1.25A/125V | AEK7048 |
| ⚠ | IC604 FUSE 0.75A/125V | AEK7062 |
| ⚠ | IC702 FUSE 2.5A/125V | AEK7049 |
| ⚠ | IC802 FUSE 3.5A/125V | AEK7017 |
| ⚠ | IC951 FUSE 1.25A/125V | AEK7048 |
| ⚠ | D302 | 1SS133 |
| ⚠ | D350 | MTZJ39B |
| ⚠ | D451,D501 | D1NL20U |
| ⚠ | D550 | MTZJ15B |
| ⚠ | D750 | MTZJ4.3B |

# 6. ADJUSTMENT

## 6.1 TV MODULE ADJUSTMENT

＊ It is not necessary to adjust the ASSY normaly when exchanging the ASSY. But the adjustment is necessary when exchanging the Front End (U301) and IC302 VIF/SIF IC.

| No. | Adjustment Name | Adj. Point | Measurement Point | Adjustment Value | Adjustment State |
|---|---|---|---|---|---|
| 1 | VCO freerun frequency (AFC voltage) adjustment | L315 | The solder land named "AFT" | 1.90V ± 0.20V<br>Note1 | Terrestrial tuner input /through output.<br>Any channel, RF Input ≥ 60dBu<br>System = B/G, I or D/K<br>AFT = OFF<br>Note1 |
| 2 | AGC start point adjustment | VR300 | The solder land named "AGC" | 3.80V ± 0.20V | Terrestrial tuner input<br>Ch = E9(203.25MHz), Video= Blackburst<br>RF Input = 60.0 ± 1.0dBu<br>System = B/G, I or D/K |

Note 1 : The adjustment spec. is defined without the thermal drift after the power on.
Therefore, start the adjustment at least 10 minutes after the power on.

## A TV MODULE ASSY

**SIDE A**

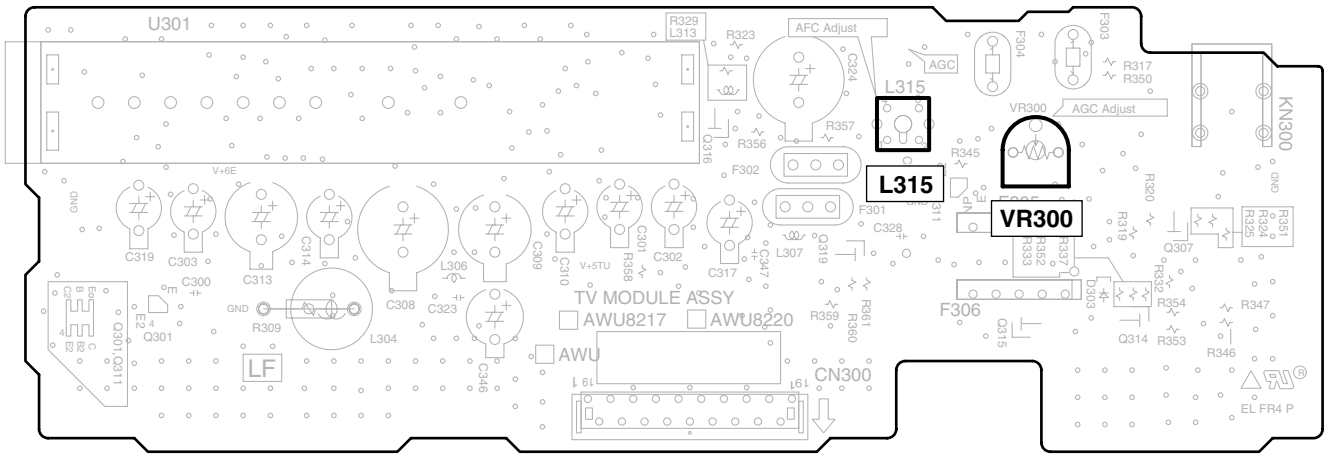



Fig.1 Adjustment Points (TV MODULE ASSY)

## A TV MODULE ASSY

**SIDE B**

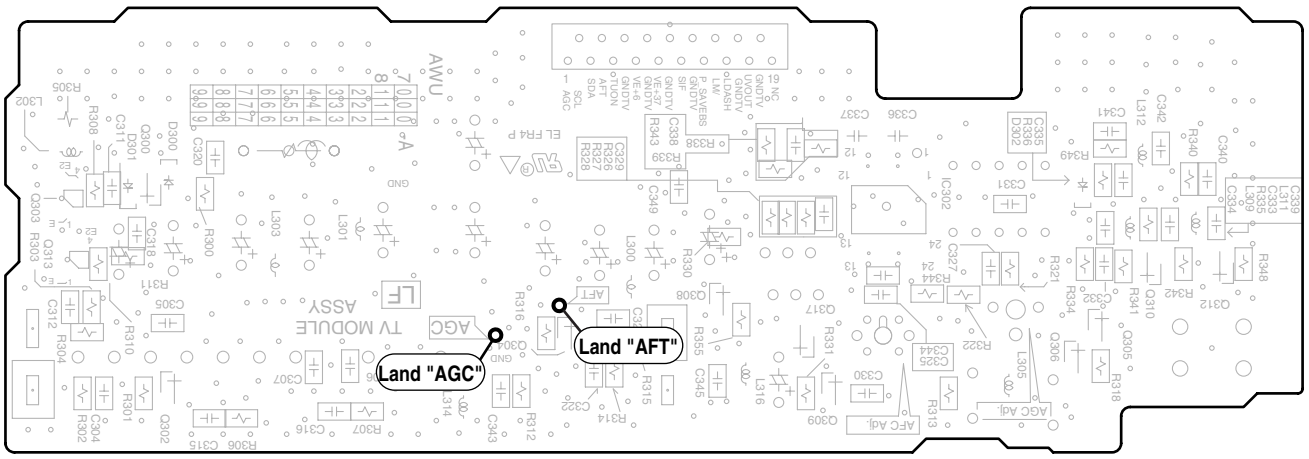



Fig.2 Measurement Points (TV MODULE ASSY)

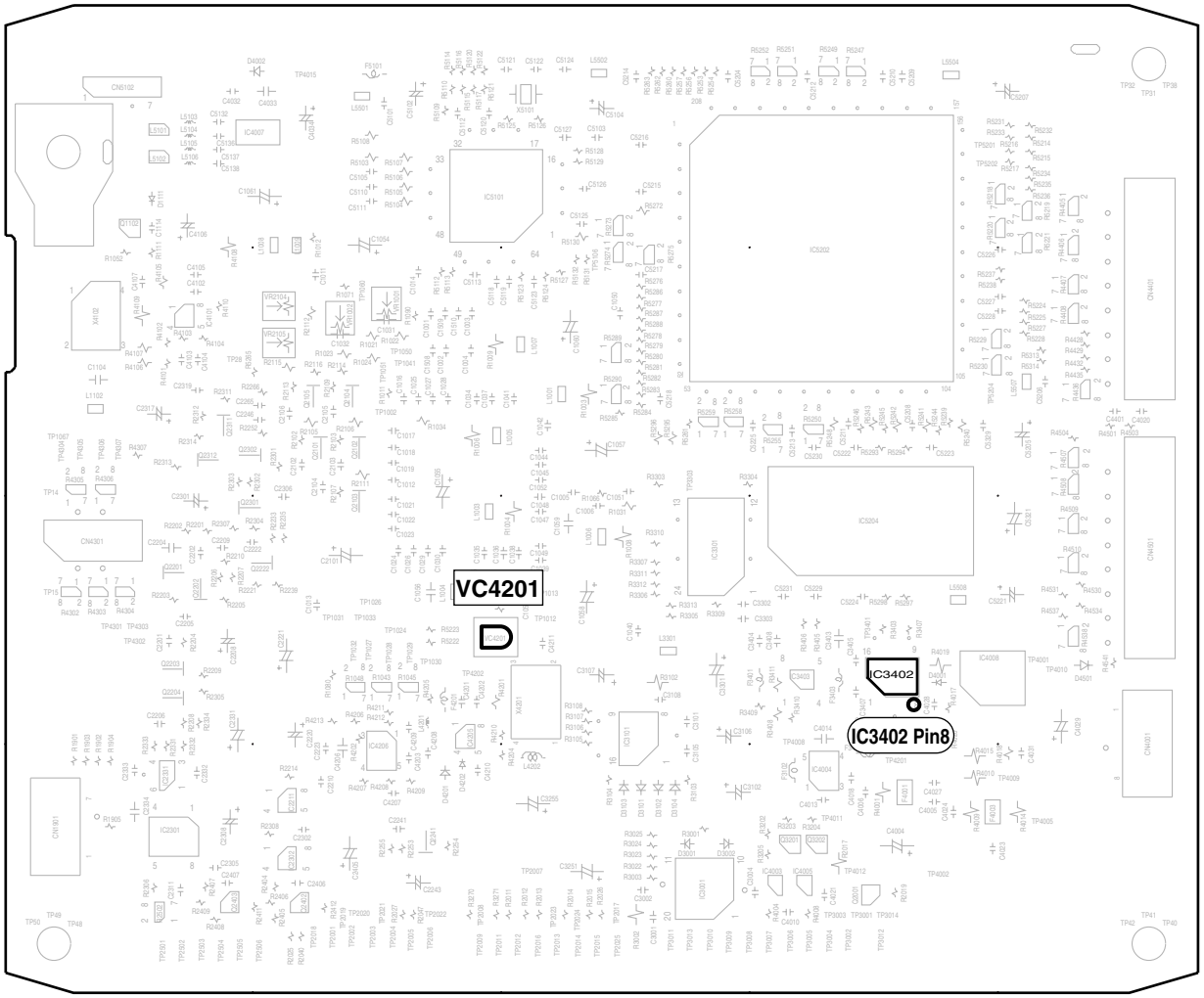
# 6.2 MAIN ASSY ADJUSTMENT

∗ It is not necessary to adjust the ASSY normaly when exchanging the ASSY, but confirm the data.

| No. | Adjustment Name | Adj. Point | Measurement Point | Adjustment Value | Adjustment State |
|---|---|---|---|---|---|
| 1 | Master clock free-running adjustment (Clock system adjustment) | VC4201 | MAIN ASSY IC3402 Pin8 (XTO) (SM8707KV) | 27.000000MHZ ± 130Hz | No signal input |

## D MAIN ASSY

**SIDE A**



# 7. GENERAL INFORMATION
## 7.1 DIAGNOSIS

### Service Diagnosis List

#### 7.1.1 CPRM ID NUMBER AND DATA SETTING

The Setting is necessary

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY , DRIVE ASSY or the FLASH ROM is exchanged.

#### 7.1.2 MODEL SETTING

#### 7.1.3 DOWNLOAD METHOD

The Setting is necessary

- When the MAIN ASSY is replaced.
- When the CONTROL ASSY is replaced.
- When the MAIN ASSY and CONTROL ASSY is replaced.

#### 7.1.4 SERVICE MODE

[First Screeen] (Version information, etc)
[Sub Screen 1]
[Sub Screen 2] (Result of error-rate measurement)
[Sub Screen 3] (HDD information)

[Second Screen] (ATA/ATAPI debug screen)
[Sub Screen 3] (writer maintenance information of ATA/ATAPI DEBUG OSD)
[Sub Screen 4] (ATA/ATAPI DEBUG OSD_LD degradation judgement)

[Third Screen] (DV debug screen)
[Sub Screen 1] (DV/1394 debug OSD)

[Fourth Screen] (VR-recording error log)
[Sub Screen 4] (Error log for VR recording)
[Sub Screen 6] (R-Zone information)

[Fifth Screen] (Error log for VR playback)
[Sub Screen 2] (Error log for VR playback)

#### 7.1.5 SERVICE SPECIFICATIONS OF PT MICROCOMPUTER

#### 7.1.6 SPECIFICATIONS OF DSP DISPLAY

#### 7.1.7 VIDEO ADJUSTMENT FOR SPECIFIC AREA

**Purposes:**

Depending on the area, jitter may appear in a picture received by the tuner, as conditions of signals received by the tuner are different from area to area. To correct this kind of problem, the function of the System Codec AVIO control section for adjusting signals received by the tuner can be used.

#### 7.1.8 AGING MODE

## 7.1.1 CPRM ID NUMBER AND DATA SETTING

### Entering the ID Number and ID Data for DVD Recorder

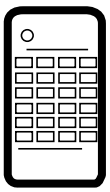
For the DVD recorder,it is necessary with the recoding/playback of DVD–RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, operations in the future may not be guaranteed. You will find the ID number to be set on the ID label on the rear panel.

**Important:** If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

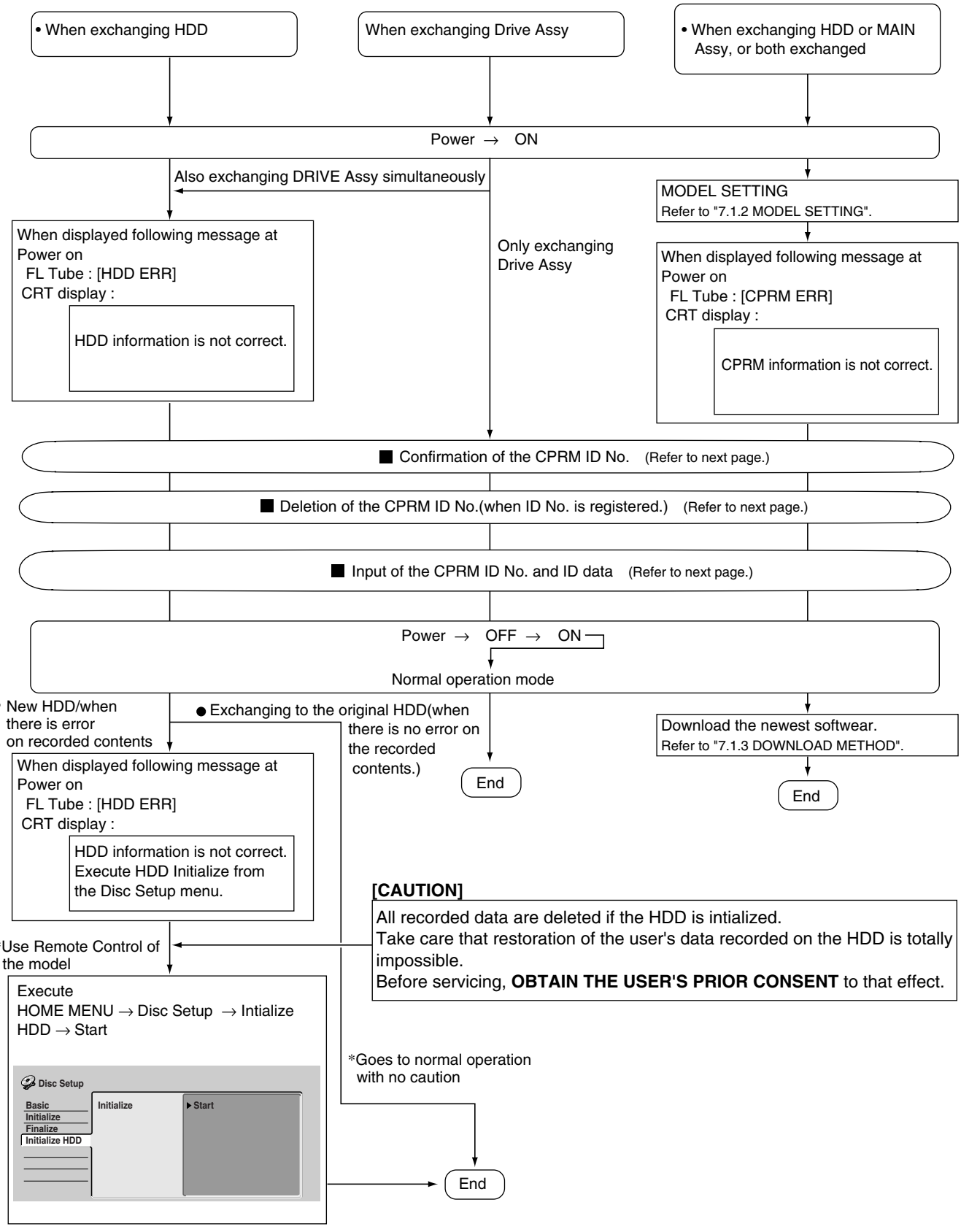
### The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY , DRIVE ASSY or the HDD is exchanged.

**JIGS AND MEASURING INSTRUMENTS**

| | |
|---|---|
|  Service Remote Control Unit (GGF1381) | DVD Recorder Data Disc (GGV1179) |

## Input Flow of the ID No. and ID data when exchanging HDD, MAIN Assy or Drive Assy

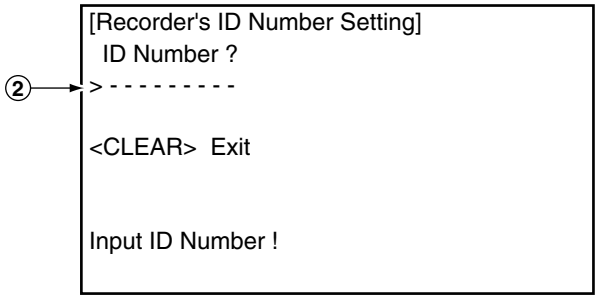

• When exchanging HDD
When exchanging Drive Assy
• When exchanging HDD or MAIN Assy, or both exchanged
Power → ON
Also exchanging DRIVE Assy simultaneously
MODEL SETTING
Refer to "7.1.2 MODEL SETTING".
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
Only exchanging Drive Assy
When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.
■ Confirmation of the CPRM ID No. (Refer to next page.)
■ Deletion of the CPRM ID No.(when ID No. is registered.) (Refer to next page.)
■ Input of the CPRM ID No. and ID data (Refer to next page.)
Power → OFF → ON
Normal operation mode
● New HDD/when there is error on recorded contents
● Exchanging to the original HDD(when there is no error on the recorded contents.)
End
Download the newest softwear.
Refer to "7.1.3 DOWNLOAD METHOD".
End
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
Execute Initialize from the Disc Setup menu.
[CAUTION]
All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
*Use Remote Control of the model
Execute
HOME MENU → Disc Setup → Intialize
HDD → Start
Disc Setup
Basic
Initialize
Finalize
Initialize HDD
Initialize
Start
*Goes to normal operation with no caution
End

## How to Input the ID Number and ID Data

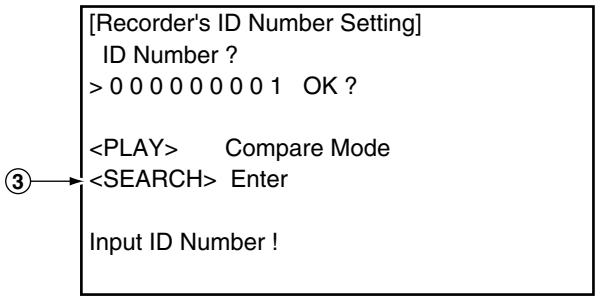
**Note:**
Be sure to enter the ID number in Stop mode.
Use the service remote control (GGF1381) for operations. Only opening/closing of the tray are performed from the player.
The ID data disc is swept out automatically after the recorder has read the data from it.

① To enter the input mode, press ESC + STEREO sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

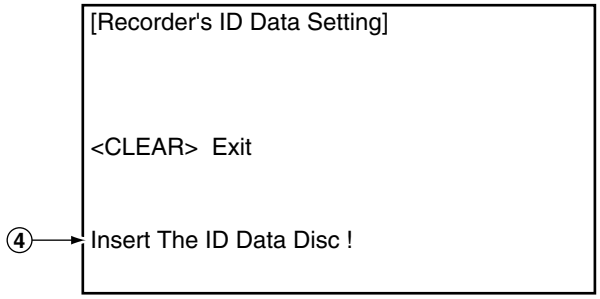
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



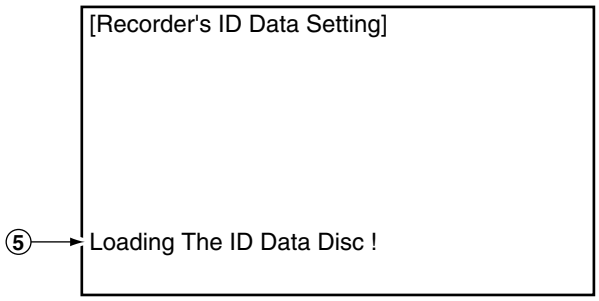

③ After inputting the number, press SEARCH to register the ID number.



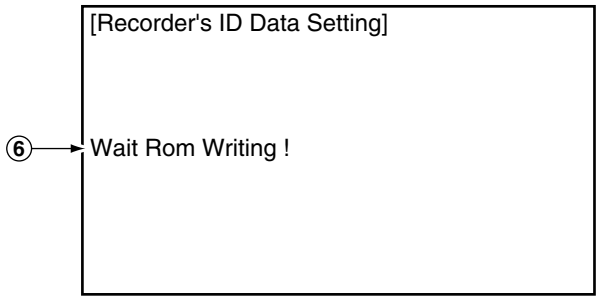

④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/▲" on the player.




⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

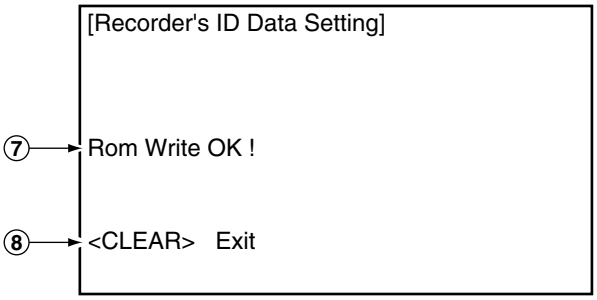



⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")




⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID DATA OK.")

⑧ After confirming this message, press CLEAR to exit the input mode.

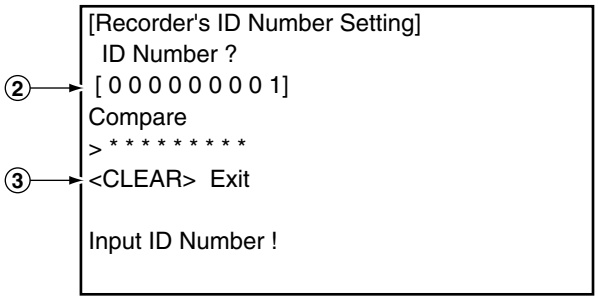


## How to Confirm the ID Number

① Press ESC + STEREO sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

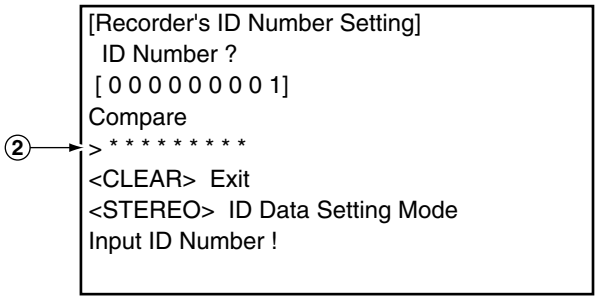
③ To exit this mode, press CLEAR.



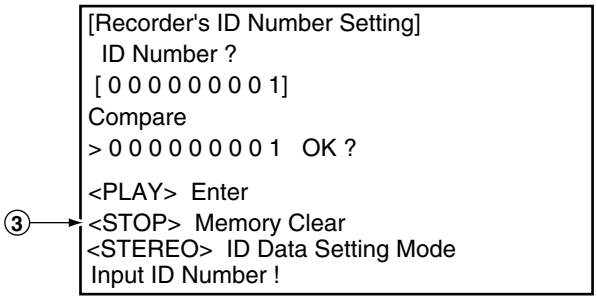

## How to Clear the ID Number

① Press ESC + STEREO sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.




③ After inputting the number, press STOP.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step 2.
(STOP is not accepted until 9 digits are entered.)



## 7.1.2 MODEL SETTING

**• The Setup is Necessary When :**

a) When the MAIN Assy is replaced
b) When the CONTROL Assy is replaced
c) When the MAIN Assy and CONTROL Assy are replaced

Note : Make sure of setting the correct number.

**• How to Setup the Model**

1) After power on, the following screen is displayed on TV monitor.
Press " 32 " by using the remote control unit for service(GGF1381).

```
[ Recorder 's  Model  Setting]
  Input the number by using the remote for Service.

  > --

  Input  No.        Model
  [    32       :  DVR-520H        ]
  [    34       :  DVR-720H        ]
```

2) After 1), the following screen is displayed on TV monitor.
Press " 012 " by using the remote control unit for service.

```
[ Recorder 's  Type  Setting]
  Input the number by using the remote for Service.

  > ---                (Type  --  ,  Region  No.  -)

  Input  No.        Type
  [    01       :  WY      <Europe>          ]
  [    02       :  WV      <UK>              ]
```

Note : For WV type, press " 022 ".

The setting complete when OSD is disappeared.

3) Unplug the power cable.
4) Reset the recorder to all its factory settings.
   1. Make sure that the recorder is on.
   2. Press and hold [STOP] and press [STANDBY/ON] key on the front panel.
      The recorder turns off with all settings reset.
5) Enter the Service Mode and then confirm the Model Name " DVR-520H/WY ".
   1. Make sure that the recorder is on.
   2. Press [ESC] then [DISP] keys by using the remote control unit for Service.

```
DVR-520H/WY
  VERSION   : 2.69
  SYSCON    : RELEASE_146
              Rev     :1.5036  $
 TUFLCON    : 6.50    MASK              OK
    DRIVE   : DVD-RW DVR-107X           OK
              1.16E                     OK
              CKT0000353WL              OK

      HDD   : ST380012ACE               80
   DEVICE   : PRISM-PLUS
   REGION   : 2
        C   : * * * * * * * * *
   FLASH    : 64M
```

* XV-DVR9H is displayed as " DVR-520H/(Destination) ".

* TUFLCON for XV-DVR9H/(WY/WV) is displayed as " 6.xx ".

**Notes :**

1) After the setting complete, you can NOT CLEAR the seting data.
Make sure the pressing number.
2) " NG " is appeared on TV when unsuitable number is pressed.
In such a case, please unplug the power cable and plug it again. Then restart the model setting.

## 7.1.3 DOWNLOAD METHOD

**• The Download is Necessary When :**

a) After model setting
b) When "NG" is displayed at First screen (version information, etc)

**[Notes]**

Be sure NOT to turn off the unit during downloading.
If the unit is turned off during downloading, the SYSCON, TUFLCON, and DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again. If that happens, repair the unit, as described below, then perform downloading again:

- In a case where the power to the unit was shut off during rewriting of the SYSCON program:
  The SYSCON program will not function properly if the power to the unit is forcibly shut off while the message "DOWNLOAD-1" is displayed on the FL display during downloading. If downloading of the programs from the disc or through serial communication becomes impossible, replace the FLASH ROM.
- In a case where the power to the unit was shut off during rewriting of the DRIVE program:
  The DRIVE program will not function properly if the power to the unit is forcibly shut off while the message "DOWNLOAD-2" is displayed on the FL display during downloading. If downloading of the programs from the disc or through serial communication becomes impossible, replace the DRIVE ASSY.
- In a case where the power to the unit was shut off during rewriting of the TUFLCON program (only for the flash-type TUFLCON microcomputers):
  The TUFLCON program will not function properly if the power to the unit is forcibly shut off while the message "DOWNLOAD-3" is displayed on the FL display during downloading. If downloading of the programs from the disc or through serial communication becomes impossible, replace the TUFLCON microcomputer.

## 1. DISC DOWNLOAD METHOD

**• How to Download**

This is disc download method to save the initial setting data and user setting data.
However, the following data is deleted after downloading by this method.

* REC mode
* Last channel (Before turn unit off)

1) Open a disc tray in the " DVD " function.
2) Put the download disc on the tray.
3) Press and hold a " STOP REC " button for playback,
   then press a " STOP " button on a front panel.
   - The disc tray closes automatically and the disc is loaded.
   - The disc tray opens automatically after loading.
4) Take out the Download Disc.
   - " DISC DWLD " is displayed on FL and download is started.
   - The display on FL changes to " DOWNLOAD-1 "
   - The display on FL changes to " DOWNLOAD-2 "
   - The display on FL changes to " DOWNLOAD-3 " (*)
   - After download is completed, the power turns off, and turns on and a disc tray closes automatically.
   * It takes for about 5 minutes until download is completed.
5) Press and hold a " ESC ", then press " DISP " on a test mode remote control unit for the release version confirmation.
6) Confirm a firmware release version.
7) Press " ESC " on a test mode remote control unit in order to exit the test mode.

(*) : " DOWNLOAD-3" is displayed only when the TuFL u-com is FLASH type.

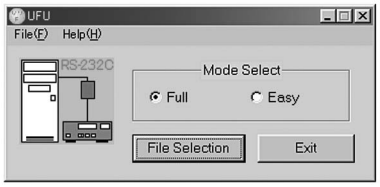
## 2. Serial DOWNLOAD METHOD

**[Notes]**
This method is secondary way when the disc loading is impossible.

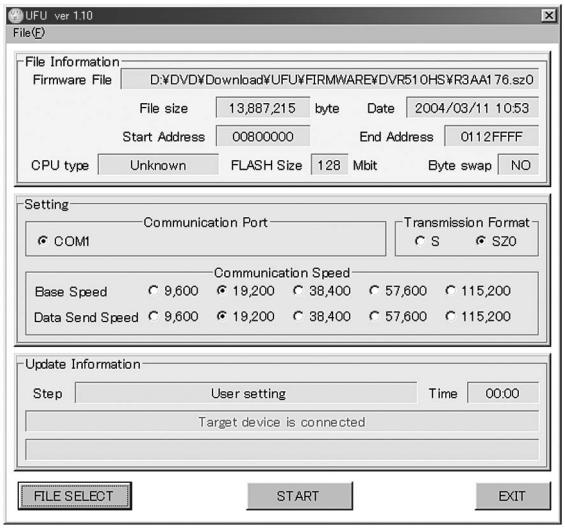
**• JIGS**
* PC with serial port
* RS232C straight cable
* RS232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Download program (UFU.exe)
* Firmware

**• Connection**
PC ⇔ RS232C cable ⇔ RS232C I/F ⇔ 7P FFC ⇔ DVD Recorder

**• How to Download**
1) Connect the 232C I/F JIGS above way.
2) Turn on the PC and start the " UFU.exe ".




. 3) Select the Firmware file. ("sz0" file)
4) Turn the DVD recorder on and start the download program.
" Target Device is connected" is appeared on the screen.




. 5) Select the Communication Speed (Baud Rate)
a) Base Speed 38,400
b) Data Send Speed 115,200
6) START
* Even if you click "START" button,
sometimes "Communication Error" may come out one to twice, and download may fail.
In this case, please click "START" again.
* Other factors can be considerd if download fails 3 times or more.
* And it takes about an hour for updating the firmware.

## 7.1.4 SERVICE MODE

For service operations, use the GGF1381 remote control unit for service.
The Service-mode screens consist of nine mode screens, which are classified into such rough categories as recording system and VR playback system, and their subscreens.

- **How to enter Service mode** : Press the ESC then DISP keys in turn while no GUI is displayed. The first screen (version information, etc.) shown below is displayed.
- **How to exit Service mode** : Press the ESC key.
- **How to advance to the next Service-mode screen** : While the first screen is displayed, press directly one of the keys 1-9. For service, use the keys 2 to 5, as shown below.
- **How to advance to a subscreen within the same Service-mode screen** : Press the DIG/ANA key.

■ **The Service-mode screens to be used for service are as follows:**

1 = First screen: Version information, etc.
2 = Second screen: ATA/ATAPI debug screen (Writer data)
3 = Third screen: DV debug screen
4 = Fourth screen: Error log for the VR recording system
5 = Fifth screen: Error log for the VR playback system

## ■ Description of Each Service-mode screen

### 1. First screen (version information, etc.)

* XV-DVR9H is displayed as " DVR-520H/(Destination) ".

```
① DVR-520H/WY
② VERSION  : 2.69
③ SYSCON   : RELEASE_146
             Rev    :1.5036  $
④ TUFLCON  : 6.50   MASK          OK
⑤ DRIVE    : DVD-RW DVR-107X      OK
             1.16E                OK
             CKT0000353WL         OK
⑥ HDD      : ST380012ACE          80
⑦ DEVICE   : PRISM-PLUS
⑧ REGION   : 2
⑨ C        : * * * * * * * * *
⑩ FLASH    : 64M
```

**OK** : OK (proper combination)
**NG+** : Version of the tuner microcomputer too advanced
**NG–** : Version of the tuner microcomputer too old (*1)

* TUFLCON for XV-DVR9H/(WY/WV) is displayed as " 6.xx ".

**OK** : OK (proper drive)
**NG** : NG (improper drive) (*2)

**OK** : OK (proper combination)
**NG+** : Version of the drive too advanced
**NG–** : Version of the drive too old (*3)

**OK** : Serial No. of the drive already registered
**NG** : Serial No. of the drive not registered (*4)

(*1–*4 : Refer to two pages after.)

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software (Edition administration No. [from top to bottom, common software, firmware, application software])
④ Version No. of the tuner microcomputer, Mask or Flash
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive (Model name, version No., model type, serial No.)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ Version No. of PRISM
⑧ Region No.
⑨ CPRM data (CPRM key No.)
⑩ FLASH ROM information (64M)

- **Details on HDD data are described below:**

```
HDD  :  WDC10234564 # 80
```

Capacity of the HDD (unit: Gbytes)
HDD identification error indication
Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

**Table 1: HDD data indications according to various HDD connection statuses**

| HDD identification conditions | Example of HDD data to be displayed | Remarks |
|---|---|---|
| Failure in physical identification of HDD (no connection, defective HDD, interface error) | Blank space | |
| Physical identification of HDD possible, but not identified | WDC 10234564 # 80 | "#" is displayed as HDD identification error |
| Physical identification of HDD possible, HDD identified, but failure in logical formatting | WDC 10234564 ! 80 | "!" is displayed as HDD identification error |
| Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified) | WDC 10234564 80 | |

While the first screen shown above is displayed, press the DIG/ANA key to enter the subscreen shown below.
**Note:** Each time the DIG/ANA key is pressed, the display changes between the first screen and its subscreen.

### • Subscreen 1: Simple diagnosis of the RF level

By checking the AFT and AGC voltages in this debug mode, the status of the RF signal received by the UV tuner can be checked.

```
MODEL   : DVR-520H/WY
VERSION : 2.69
TUFLCON : 6.50    MASK              OK
DRIVE   : DVD-RW DVR-107X           OK
          1.16E                     OK
          DADL000219WL              OK

DEVICE  : PRISM-PLUS
REGION  : 2
C       : * * * * * * * * *

INPUT CH : a8ch
AFT VOL  : 2000 mV  <-------------- AFT Voltage
AGC VOL  : 5000 mV  <-------------- AGC Voltage
```

* XV-DVR9H is displayed as " DVR-520H/(Destination) ".

* TUFLCON for XV-DVR9H/(WY/WV) is displayed as " 6.xx ".

**1) AFT voltage (AFT VOL)**

How much tuning is off is monitored, as shown below:

5000mV
↑
Tuning is off toward lower frequency
↑
2400mV
↑
1900mV Just Tune
↓
1400mV
↓
Tuning is off toward higher frequency
↓
0mV

**2) AGC voltage (AGC VOL)**

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

| | Field Intensity | AGC VOL |
|---|---|---|
| Intense field area<br>(Clear image) | 70 dBμ or more | 2700 mV or less |
| Less intense field area<br>(Noise may be generated.) | 50 dBμ or more<br>70 dBμ or less | 2700mV - 4300mV |
| Weak field area<br>(Much noise. EPG/VPS/PDC sometimes cannot be obtained.) | 30 dBμ or more<br>50 dBμ or less | 4300mV or more<br>Distinction is impossible at weak field or less. |
| Very weak field area<br>(Image damaged. EPG/VPS/PDC cannot be obtained.) | 30 dBμ or less | 4300 mV or more |

**Tips:**
For good reception, the field intensity must be 50 dBμ or more (AGC VOL 3100 mV or more).
For accurate measurement, use a field intensity meter.

### • Subscreen 2: Result of error-rate measurement

ERR RATE : x.xxE-x/

**Note:** Be sure to start playback after displaying this subscreen to calculate the error rate.

During playback in VR mode, the average error rate of the past 10 VOBUs is displayed, and the rotation rate of the drive (/: normal speed, no display = double speed) is also displayed.

### • Subscreen 3: HDD information

HDD Info
Life Time: 87599h 09m 05s

Cumulative HDD-on time

**• How the data on cumulative HDD-on time are processed in memory**

Storage place: Backup SRAM, Flash ROM

Timing of referring to the data on cumulative HDD-on time: When the power is turned on, the backup SRAM is referred to regarding the data on cumulative HDD-on time, and the data are stored in the RAM. If referring to the backup SRAM fails, the flash ROM is referred to.

Timing of updating the data on cumulative HDD-on time: While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the backup SRAM. When the power is turned off, the data are stored in the flash ROM.

**How to clear the data on cumulative HDD-on time**

Backup SRAM: When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys), or when the HDD is initialized by pressing the "ESC" key then the the "one-shot memory" key.

**Notes:** The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

Flash ROM: The data on cumulative HDD-on time cannot be cleared (they are not cleared even if resetting to factory-preset values is performed or if the system-control computer software is downloaded).

**Note:** The data on cumulative HDD-on time in the flash ROM can be cleared if you clear the data in the backup SRAM following the above-mentioned procedures then turn off the power of the unit, because the data in the backup SRAM are stored in the flash ROM when the power is turned off.

**• When "NG" is displayed at First screen (version information, etc)**

(*1) NG+ : Version of the tuner microcomputer too advanced
NG- : Version of the tuner microcomputer too old

1. When TUFL μ-com is MASK type
NG+ : Download the firmware.
NG- : Replace the TUFL μ-com or JCKB ASSY.

2. When TuFL μ-com is FLASH type
NG+ : Download the firmware.
NG- : Download the firmware.

(*2) NG : NG (improper drive)

Replace the correct Drive Assy.

(*3) NG+ : Version of the drive too advanced
NG- : Version of the drive too old

NG+ : Download the firmware.
NG- : Download the firmware.

(*4) NG : Serial No. of the drive not registered

Check the part No. and replace the correct Drive Assy.

## 2. Second screen (ATA/ATAPI debug screen)

Subscreen 1 of the second screen is displayed when the ESC, DISP, then "2" keys are pressed, in that order.
**Note:** Each time the DIG/ANA key is pressed, the display changes cyclically among subscreens 1 to 4.

### • Subscreen 1: Command log (ALL) of ATA/ATAPI DEBUG OSD

```
ATA/ATAPI History - ALL
  32 010000000000A000     OK
  32 2A00000DEBB000063000 OK
  32 2A00000DF1E000063000 OK
  32 2A00000DF81000063000 OK
  32 2A00000DFE4000062000 OK
  32 2A00000E046000063000 OK
  32 2A00000E0A9000063000 OK
  32 2A00000E10C000063000 OK
> 32 2A00000E16F000062000 23A00
```

(Not for Service)

### • Subscreen 2: Command log (ERROR) of ATA/ATAPI DEBUG OSD

(Not for Service)

### • Subscreen 3: Writer maintenance information of ATA/ATAPI DEBUG OSD

The cumulative power-on time and error log that are administered by the writer are displayed. Such information is obtained when the power is turned on. Thereafter, each time the SEARCH key on the remote control unit for service is pressed while subscreen 3 is displayed, the updating command is sent, and the data on the subscreen are updated. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.

```
ATA/ATAPI Writer MaintenanceInfo
①Power ON  00 00 00 0000 00000000
  0102:56  01 00 00 0000 00000000
DVD        02 00 00 0000 00000000
②R 0053:48 03 00 00 0000 00000000
③W 0022:16 04 00 00 0000 00000000
CD         05 00 00 0000 00000000
④R 0034:04 06 00 00 0000 00000000
⑤W 0000:00 07 00 00 0000 00000000
                           00-00
```

Error log for the Writer

(Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

### • Subscreen 4: ATA/ATAPI DEBUG OSD_LD degradation judgment

The degrees of degradation of the LD (laser diode) for the writer (LDs for CD and DVD separately), temperature, and RF level are displayed. To update the data on the subscreen, press the SEARCH key on the remote control unit for service while subscreen 4 is displayed. See Table 1 below for a description of each item and the conditions for updating data.

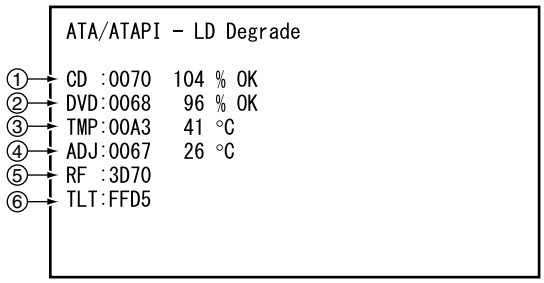



**Table 1: Description of each item and conditions for updating data**

| No. | Item | Description | Conditions for updating by pressing the SEARCH key | Remarks |
|---|---|---|---|---|
| ① | CD | Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive) | No disc inserted in the disc tray | ∗1 |
| ② | DVD | Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive) | No disc inserted in the disc tray | ∗1 |
| ③ | TMP | Current temperature inside the Writer | No disc inserted in the disc tray | ∗1 |
| ④ | ADJ | Temperature (approx. 25°C) inside the Writer during adjustment | No disc inserted in the disc tray | ∗1 |
| ⑤ | RF | RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal) | During playback of disc medium | ∗2 |
| ⑥ | TLT | Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.) | No condition | |

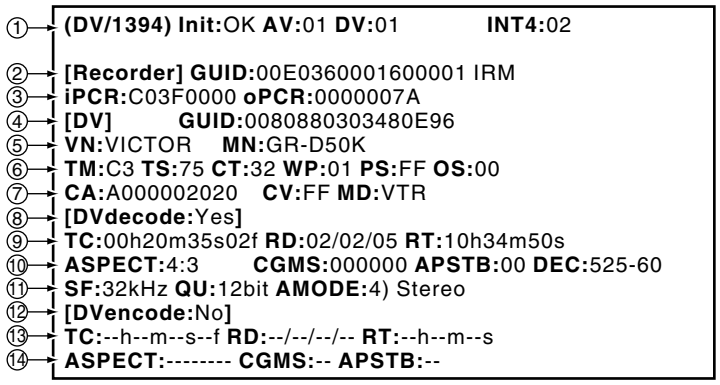
∗1 : For correct judgment, after leaving the unit at a normal temperature (25°C typ.) for some time, judgment must be performed immediately after the unit is turned on with no disc loaded.

∗2 : Use this item only for confirmation before and after lens cleaning, as the lens becomes dirty with dust.

## 3. Third screen (DV debug screen)

Subscreen 1 of the second screen is displayed when the ESC, DISP, then "3" keys are pressed, in that order.

### • Subscreen 1: DV/1394 debug screen


①→ (DV/1394) Init:OK AV:01 DV:01 INT4:02
②→ [Recorder] GUID:00E0360001600001 IRM
③→ iPCR:C03F0000 oPCR:0000007A
④→ [DV] GUID:0080880303480E96
⑤→ VN:VICTOR MN:GR-D50K
⑥→ TM:C3 TS:75 CT:32 WP:01 PS:FF OS:00
⑦→ CA:A000002020 CV:FF MD:VTR
⑧→ [DVdecode:Yes]
⑨→ TC:00h20m35s02f RD:02/02/05 RT:10h34m50s
⑩→ ASPECT:4:3 CGMS:000000 APSTB:00 DEC:525-60
⑪→ SF:32kHz QU:12bit AMODE:4) Stereo
⑫→ [DVencode:No]
⑬→ TC:--h--m--s--f RD:--/--/--/-- RT:--h--m--s
⑭→ ASPECT:-------- CGMS:-- APSTB:--

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

| No. | Item | Description | Remarks |
|---|---|---|---|
| ① | Init | Whether the initialization of uPD72893B (1394LINK & DVcodec IC) has been completed (OK) or not (NG) | In a case of NG, communication with uPD72893B may have failed. |
| | AV | Number of AV devices on the local bus | |
| | DV | Number of DV devices on the local bus | If the number does not become 01 even if a DV device is connected, identification of that device fails. |
| | INT4 | Number of executing INT4(PIO) interrupt processing routines until a POWER ON notification arrives from uPD72893B (normally, 02) | |
| ② | GUID | GUID set in ConfigROM of the unit | In a case of ROOT (IRM), IRM is displayed at the rightmost of the GUID indication |
| ③ | iPCR | iPCR value of the unit | |
| | oPCR | oPCR value of the unit | |
| ④ | GUID | GUID set in ConfigROM of the connected DV device | Data are displayed only if one DV device is identified. If the connected DV device is ROOT (IRM), IRM is displayed at the rightmost of the GUID indication |
| ⑤ | VN | Vendor name set in ConfigROM of the connected DV device | Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.) |
| | MN | Model name set in ConfigROM of the connected DV device | Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.) |
| ⑥ | TM | Transport Mode data obtained from the DV device | Data are displayed only if one DV device is identified. |
| | TS | Transport State data obtained from the DV device | |
| | CT | Cassette Type data obtained from the DV device | |
| | WP | Copy-protection data obtained from the DV device | |
| | PS | Power-state data obtained from the DV device | |
| | OS | Output signal mode data obtained from the DV device | |
| ⑦ | CA | Connect AV data obtained from the DV device | Data are displayed only if one DV device is identified. |
| | CV | Camera/VTR data obtained from the DV device | |
| | MD | DV device mode | Camera or VTR is displayed only if one DV device is identified. |

| No. | Item | Description | Remarks |
|---|---|---|---|
| ⑧ | [DVdecode:XXX] | Whether Yes (in the process of requesting DV input) or No is indicated in XXX | Normally, Yes is indicated only when CH is set to DV |
| ⑨ | TC | Time-code data of the DVdecode Stream, or response data of the Time Code command | Stream time-code data are obtained when playback in the forward direction is performed. Otherwise, time-code data are obtained through an AV/C command. |
| | RD | Rec Date of DVdecode Stream | |
| | RT | Rec Time of DVdecode Stream | |
| ⑩ | ASPECT | Aspect Ratio of DVdecode Stream | |
| | CGMS | CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch2, bits 3-2: Audio ch1, and bits 1-0: Video) | Recording of DV input cannot be performed unless the value of CGMS is 00. |
| | APSTB | APS trigger bit of DVdecode stream | |
| | DEC | With/without DVdecode stream input | With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated. |
| ⑪ | SF | Sampling Frequency of DVdecode Stream | If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit. |
| | QU | QUANTIZATION of DVdecode Stream | |
| | AMODE | AUDIO MODE of DVdecode Stream | |
| ⑫ | [DVencode:XXX] | Whether Yes (in the process of requesting DV output) or No is indicated in XXX | Normally, Yes is indicated only with HDD or DVD playback |
| ⑬ | TC | TIME CODE of DVencode stream | |
| | RD | REC DATE of DVencode stream | |
| | RT | REC TIME of DVencode stream | |
| ⑭ | ASPECT | Aspect Ratio of DVencode stream | |
| | CGMS | CGMS of DVencode stream (common to video, audio ch1 and audio ch2) | Normally, sources other than CGMS=00 are not output. |
| | APSTB | APS trigger bit of DVencode stream | |

## ■ Simple Diagnosis

| Symptoms | Location in the Debug Screen | Items to be Checked, and Conditions | Possible causes |
|---|---|---|---|
| No operation for either DV input or output | ① | Check the init indication:<br>OK: Initialization of DV-related LSIs (IC5101, IC5202) appropriately completed<br>NG: Communication failure between DV-related LSIs (IC5101, IC5202) and HOST microcomputer (IC1001). Initialization of DV-related LSIs (IC5101, IC5202) has not been completed properly. | Defective IC, defective soldering, defective power supply, etc. |
| | | Check the number of DV devices when one DV device is connected to the recorder:<br>01 : The connected DV device is correctly identified.<br>Other than 01 : The connected DV device is not correctly identified. | Defective DV terminals, improper connection of the DV-terminal board, defective IC, defective cables, an IEEE 1394 device other than the DV device connected |
| No picture nor sound for DV input | ⑧ | Check of DV decoding when the recorder channel is set to DV:<br>Yes: The recorder is in the process of a DV input operation<br>No: The recorder is not executing a DV input operation | Defective IC, defective soldering, defective power supply, etc. |
| | ⑩ | Check DEC:<br>525-60: An NTSC DV signal is input from the DV device.<br>625-50: A PAL DV signal is input from the DV device.<br>No: No DV signal is input from the DV device. | Defective DV terminals, improper connection of the DV-terminal board, defective IC, defective source device<br>**Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears. |
| DV input recording impossible | ⑩ | Check CGMS:<br>00: A copy-permitted source is being input.<br>Other than 00: A copy-protected source is being input. | Recording cannot be performed for a copy-protected source. |
| No sound for DV input | ⑪ | Check SF:<br>32 khz: An audio signal with 32-kHz sampling frequency is being input.<br>48 khz: An audio signal with 48-kHz sampling frequency is being input.<br>44 khz: An audio signal with 44.1-kHz sampling frequency is being input. | An audio signal with 44.1-kHz sampling frequency is muted. |
| No picture nor sound for DV output | ⑫ | Check DVencode during DVD/HDD playback:<br>Yes: The recorder is in the process of a DV output operation<br>No: The recorder is not executing a DV output operation<br>(No is also displayed during playback of copy-prohibited sources or simultaneous-recording/playback.) | Defective IC, defective soldering, defective power supply, etc. |

## 4. Fouth screen (VR-recording-related error log)

Subscreen 1 of the fourth screen is displayed when the ESC, DISP, then "4" keys are pressed, in that order.
**Note:** Each time the DIG/ANA key is pressed, the display changes cyclically among subscreens 1 to 11.

### • Subscreen 1:

```
RunFnc:---- Ecl:*****  Rate:**
            ----------------
            ----------------
            ----------------
            ----------------
            ----------------
            ----------------
            ----------------
            ----------------
```

### • Subscreens 2 and 3:

These subscreens are not for service use.

### • Subscreen 4: Error log for VR recording

```
① Recording Error History Display
  01-06-01 20:05:30 No SysHdr IN
  01-06-02 00:22:10 Write Error
```

① Recording-related error log for the last 18 errors, divided into 2 screens (generation time [year-month-day, hour:minute:second], error data in simplified description)

**Notes:**
• For details on error messages, see Table 1 "Description of VR-recording-related errors".
• The two error-log screens can be switched by pressing the SPEED+ or SPEED- key.

### • Subscreens 6: R-Zone information

Set the DVD-R disc, then display the subscreen 6.

```
 R-Zone   num:****  ver:0020
nwa:******** sa:********  st:**
nwa:******** sa:00003000  st:**
nwa:******** sa:********  st:**
nwa:******** sa:********  st:**
nwa:******** sa:********  st:**
```

ver: TMP VMGI Ver
  0010 : TMP VMGI Ver1.0 disc
  0020 : TMP VMGI Ver2.0 disc

sa:
  00000600 : TMP VMGI Ver1.0
  00003000 : TMP VMGI Ver2.0

### • Subscreens 5, 7 to 11:

These subscreens are not for service use.

## Table 1: Description of VR-recording-related errors

### ● Error related to MPEG Encoder

| Error Message | Description |
|---|---|
| Stream NG | Inappropriate input stream data |
| Stm Start NG | Failure to start encoding (reasons not clear) |
| AVEnc Hang | AVEncoder failed |
| No SysHdr IN | System packet is not input periodically |
| Strm Start NG | Timeout waiting for system packet input at the beginning |
| IN Encode * | Changes cannot be made in the process of encoding |

### ● Error related to Drive system

| Error Message | Description |
|---|---|
| BUF Overflow | Overflow of the Stream Buffer |
| Drive Hang | The Drive is hung up. |
| Write Err | The Drive failed to write and could not be recovered. |
| Read Err | Reading failed, ECC failed, etc. |
| Drv Hard Err | Abnormality in the drive hardware or firmware |
| Mech No Res | No response from the mechanical-control computer |
| Drv TimeOut | Timeout waiting for drive operation |
| NWA Exhaust | NWA surpassed and impossible to use |
| MKB Invalid | MKB reading error |
| Drv Err | General error of the drive |
| Fail Repair | Repair failed |
| ReadOnly DISC * | Because some data are invalid, data cannot be written |
| May Be V mode | Although TMP_VMGI is not written, it may be Video Mode disc. |
| Rzn Rsv NG | Reserve RZone failed |
| Rzn Cls NG | Close RZone failed |
| Rzn Rpr NG | Repair RZone failed |
| Bdr Opn NG | Open Border failed |
| Bdr Cls NG | Close Border failed |
| Format NG | Format failed |
| OPC NG | OPC failed |
| PCA Full | PCA has been used up. |
| RMA Full | RMA has been used up. |
| VTSI_B Wr Err | Video Mode VTSI BUP Write Error |
| VTSI Wr Err | Video Mode VTSI Write Error |
| TMP-VMG WrErr | Video Mode TMP VMGI Write Error |
| CLS Rzon Fail | Video Mode Close Rzone failure |

### ● Error related to Dubbing

| Error Message | Description |
|---|---|
| Mem get NG | Video Mode Copy Memory has not ensured. |
| V Rsv RzoneNG | Video Mode Copy Reserve Rzone failed |
| VCHDD Info NG | Obtaining Video Mode Copy HDD Cell information failed |
| VC Pck Anl NG | Analizing Video Mode Copy Pack failed |
| VC VOBU SizeE | Video Mode Copy VOBU Size NG |
| Tracon Trn NG | Video Mode Copy Tracon tranfer has not been completed. |

● **Error related to Dubbing (continued)**

| Error Message | Description |
|---|---|
| Strm TransfNG | Video Mode Copy Stream Transfer NG |
| VC FlushC NG | Video Mode Copy Flush Cache NG |
| VC Transf Stp | Video Mode Copy Transfer Stop |
| VC CopyCancel | Video Mode Copy Copy Cancel |
| VC Idling NG | Video Mode Copy idling NG |
| VC TSO BLK NG | Video Mode Copy TSO Block transfer has not been completed. |
| VC Cell Max | Maximum number for Video Mode copy Cells exceeded |
| VC HDD Inf NG | No information on Video Mode Copy HDD |
| VC HDD C Err | Inappropriate Video Mode Copy HDD content |
| V2H SRC Prot | VR →HDD copy prohibitted material |
| V2H Aud Ch NG | VR →HDD Audio Channel NG |
| V2H Aud Stm N | VR →HDD Audio Stream number NG |
| V2H Aud Md NG | VR →HDD Audio Mode NG |
| V2H V Reso NG | VR →HDD Video resolution NG |
| V2H Unknown | VR →HDD other NG |
| H2D CP SomeNG | VR →HDD copy and other NG |

● **Other Errors**

| Error Message | Description |
|---|---|
| DRAM NG | Abnormality in access to the Work DRAM |
| SRAM NG | Abnormality in access to the backup work SRAM |
| CPRM IC NG | Inappropriate CPRM IC |
| Drive Destroy | The drive has crashed. |
| MKB REVOKED | Error in gaining data |
| WM Cracked | WM Cracked |
| VBR-SRAM NG | Abnormality in VBR SRAM |
| BK BATT Down | Backup RAM data has been erased. |
| BK FSYS Dirty | Backup RAM data has not been wrtten on the File Sys. |
| VOBU Info NG | Inappropriate VOBU information |
| EncModul Hang | Encoder routine is hung up. |
| Ourob Strm NG | Inappropriate stream data to the Ouroboros input |
| WaterMark Det | Watermark detected |
| No Video | No video input (not locked) |
| Disc Full | No further data can be written because the disc is full. |
| No More Info * | No more space in the internal work-management area |
| No Permission * | No permission to write to the disc |
| Limit Over * | Standard maximum limit exceeded |
| Rec Pause * | No operation permitted during recording pause |
| Invalid Param * | Invalid parameter |
| Protect Src * | Source to be recorded is copy-protected. |
| Now Busy * | In the process of the emergency processing |
| Invalid Disc * | The disc cannot be recognized. |
| Invalid UDF * | Invalid UDF content |
| Invalid VMG * | Invalid VMG content |
| Invalid TMVMG | Invalid TMP_VMGI content |
| Unmatch Stamp * | Impossible to modify because of nonmatching time stamp |
| Virgin DISC | Virgin Disc |

## ● Other Errors (continued)

| Error Message | Description |
|---|---|
| SW Vpb mode * | Switching to video playback routine is required. |
| SW Vrec mode * | Switching to video recording routine is required. |
| NV Pck MK Err | Error in creating NaviPack |
| NV Pck DMA Er | Inappropriate NaviPack DMA |
| Cell Close NG | Cell Close NG |
| Relocation Do | VR-recording data was relocated |
| Something * | undetermined error |
| Status NG * | Abnormality in change of statuses |
| Irr Action * | Incorrect action |
| Abort * | Cancellation |
| BusReset Done | Bus Reset has been excecuted. |
| Repair Excec | Repairing has been executed. |
| Format Excec | Formatting has been executed. |
| BUG | Some bugs |
| PARAM NO ACCP | Recording parameter is not matched. |
| DRAM CLR Err | Video Mode DRAM (Stream Buffer) Clear failure |
| V Categ ID NG | Inappropriate Category ID |
| V Cate Inf NG | Inappropriate Category information |
| V Ext TY NG | Type NG |
| V Ext MAX Ovr | Count Max exceeded |
| V ExtToo Big | The extension file is too large. |
| Over Heat | Abnormal temperatute |

## ● Error related to HDD

| Error Message | Description |
|---|---|
| HDD unauthor | Inconsistent HDD serial No. |
| HDD Destroy | HDD is not recognized on the bus. |
| TT Rec Over | Title recording time full |
| HDDReset Done | HDD Reset executed |
| Task No Activ | Task has not been activated. |
| HDD Buff High | High-level process executed for the HDD Buffer |
| HDD Trans Err | DMA error in HDD copy transfer |
| HDD Zero WR | MBR readout generated |
| HDD Initialize | HDD initialized |
| HDD MBR NG | Inconsistent MBR data |
| HDD SIG NG | Inconsistent HDD Management Data Magic |
| HDD INFO BAD | Incorrect HDD Management Data |
| HDD IRRG POFF | Abnormal power off |
| HDD SMART NG | Inappropriate HDD SMART |

## ● No Error

| Error Message | Description |
|---|---|
| Non Err * | Normal |

**Notes;**

- Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.
- In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

**Abbreviations:**

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

## 5. Fifth screen (Error log for VR playback)

Subscreen 1 of the fifth screen is displayed when the ESC, DISP, then "5" keys are pressed, in that order.
**Note:** Each time the DIG/ANA key is pressed, the display changes cyclically among subscreens 1 to 4.

### • Subscreen 1:

```
G:001-01 00h00m00s00#-.-e-- 00.00M
Tgt:STOP Now:STOP Spd: 0
Man:STOP    Sub:0 VBF:000 ABF:00
TrMd:STOP  TrSt:0 TNo:    Ver:00
RvMd:STOP  RvSt:0 DNo:    Aer:00
CcSt:STOP          Id:00000000
Stc:00000000 Tpp-Av1:+-0 V-A:+-0
MPEG2 720x480 A0 AC-3 2ch 0256k
NT  ASP:43 CGMS:0 APS:0 Src:0
END:00h00m00s00        Cell:000
```

### • Subscreen 2: Error log for VR playback

```
①→G:01-01 00m00s#-.-e-- 00000000
      h m s Message        h m s Err
  G001:000000 Tr:NuLLblk
②→L002:001230 Tr:SchLate
  L002:004103 Tp:VobDif+
  L002:004104-Tp:VobDif-
```

① Data on location of the display
Original(G)/play list (L), title No., chapter No. (X:XXX-XX), time of the display (hour, min, sec, frame [XXhXXmXXsXX]), busy mark of the virtual mechanical-control computer (#), error rate of the transfer data (X.XeXX), playback logical address (ID [XXXXXXXX])

② Error message log
Original(G)/play list (L), title No., time of generation (min, sec [XXX:XXXX]), playback-related error log for the last 8 errors (XXX:XXXXXXX)

**Notes:**
- For details on error messages, see Table 2 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected. (The possibility of a problem on the drive side is high.)

### • Subscreens 3 and 4:

These subscreens are not for service use.

## Table 2: Description of VR-playback-related errors

| Error Message | Description |
|---|---|
| Tr : NullBlk | Transfer task: NULL at the top block<br>(Detecting NG stream made at the DVR-1000 series and starting protection process.) |
| Tr : ReadErr | Transfer task: ATA read error |
| Tr : SchLate | Transfer task: ATA search late |
| Tr : SemTOvr | Transfer task: Timeout for gaining semaphore (no synchronization with the display) |
| Tr : NaviErr | Transfer task: Inconsistency between NAVI (navigator) of management data and actual NAVI |
| Tr : OrderEr | Transfer task: Inconsistent order |
| Mn : Av1Hang | Main task: Detects hang-up of AV decoder and starts recovery |
| ERR_RCV! | TPP task: Detects hang-up of AV decoder and starts recovery |
| Tp : VobDif+ | TPP task: The decoder STC advances by 1 VOBU hour. |
| Tp : VobDif- | TPP task: The STC of the management information advances |
| Tp : midNULL | TPP task: The management information pointer designated was NULL. |
| Tp : ScanNg | TPP task: Failure to set the TPP memory when scanning was canceled. |
| Tp : RStepEr | TPP task: Although the reverse step had failed, the operation was forcibly terminated because the top cell was located. |
| Tp : tppErr | TPP task: Inconsistency occurred. |
| Rv : 1stTOvr | Reverse playback task: Timeout for waiting for interruption to the top VOBU immediately after starting decoding |
| Rv : OpnTOvr | Reverse playback task: Timeout for waiting for B-picture of the open GOP immediately after starting decoding |
| Rv : OplTOvr | Reverse playback task: Timeout for waiting for I-picture of the open GOP immediately after starting decoding |
| Rv : LnkTOvr | Reverse playback task: Timeout for waiting for link |
| Rv : LnkFail | Reverse playback task: Starts compensation by detecting link failure |
| Rv : R2FTOvr | Reverse playback task: Starts retrial after detecting timeout from reverse pause to forward pause |
| Rv : TopVbEr | Reverse playback task: Forced termination because of a possible error of the top data during reverse normal playback |
| Rv : OrderEr | Reverse playback task: Inconsistent order |
| Av : B/CTOvr | AV1: Buffer-clear timeout |
| Av : StrmOvr | AV1: Timeout for waiting for stream ready |
| Av : TpmTOvr | AV1: Timeout for TP mode change |
| Av : SpmTOvr | AV1: Timeout for a step command |
| CC_OS_ERR | Closed caption task: OS error |

**Abbreviations:**

STC = System Time Clock
VOBU = Video Object Unit
GOP = Group Of Picture
B-picture = Bidirectionally predictive-picture
I-picture = Intra-picture
P-picture = Predictive-picture
TP mode change = AV1 term (Trick Play mode change)

## 7.1.5 ERROR RATE MEASUREMENT

**How to enter Error-Rate Measurement mode**

Press the ESC key then the SIDE-B key of the remote control unit for service to enter Error-Rate Measurement mode. During playback of DVD-VIDEO, Error-Rate Measurement mode can also be entered by pressing the ESC key then the PLAY key.

**How to exit Error-Rate Measurement mode**

Press the ESC key. The error-rate display disappears, and Error-Rate Measurement mode is exited.

**Note:** The error rate cannot be measured in VR mode or during CD playback.

**Functions**

① Video-mode recording (recording medium)

In this mode, DVD recording is automatically performed for 10 seconds, the recorded DVD title is played back while the error rate is being measured, then as soon as playback of the recorded DVD title is finished, playback stops.*1 After error-rate measurement is finished, the average error rate will be displayed on the FL display and OSD. Only in a case in which the calculation of the average error rate fails, the tray will open.

② DVD-VIDEO (playback medium)

Only during playback, when the ESC key then the SIDE-B key (or the ESC key then the PLAY key) are pressed, the error rate is calculated and displayed on the FL display and OSD.(∗2) Only in a case in which the calculation of the average error rate fails, the tray will open.

## ■ Changes of display

**Table 1: Video mode (recording medium)**

| Operation | Display | |
|---|---|---|
| | FL Display | OSD (On Screen Display) |
| "ERROR RATE" is displayed on the FL display for an instant. | ERROR RATE | |
| DVD recording starts. | ERROR RATE | |
| DVD recording is performed for 10 seconds. | xxxxx | |
| The recorded DVD title is played back while the error rate is being measured, then as soon as playback is finished it stops. | ER x.xE-x | ERR RATE : x.xE-x - |
| After error-rate measurement is finished (∗1), the average error rate, the measurement-finish mark (∗), and the OK/NG-judgment result (∗3) will be displayed on the FL display and OSD.<br>(If the tray opens as a result of NG judgment, the display on the FL display and OSD will be retained.) | ER x.xE-x | ERR RATE : x.xE-x ∗ OK |

**Table 2: DVD-Video (playback medium)**

| Operation | Display | |
|---|---|---|
| | FL Display | OSD (On Screen Display) |
| Only during playback, when the corresponding keys are pressed, the error rate is calculated and displayed on the FL display and OSD. (∗2) | ER x.xE-x | ERR RATE : x.xE-x - |
| After error-rate measurement is finished (∗1), the average error rate, the measurement-finish mark (∗), and the OK/NG-judgment result (∗3) will be displayed on the FL display and OSD.<br>(If the tray opens as a result of NG judgment, the display on the FL display and OSD will be retained.) | ER x.xE-x | ERR RATE : x.xE-x - OK |

∗1 : Whether error-rate measurement is finished or not is judged, as shown in Table 3 below.

### Table 3: On judgment whether error-rate measurement is finished or not

| Recording Mode | Judgment whether error-rate measurement is finished or not | Recording/playback duration required for error-rate measurement |
|---|---|---|
| Video mode | After playback of a certain amount (∗) of data<br>Measurement of the 16 ECC blocks is performed 16 times, then the grand sum is used for calculation of the error rate.<br>The capacity is as follows:<br>16 ECC blocks × 16 sectors × 2048 bytes × 16 times<br>= 8388608 bytes<br>= 67108864 bits | The time required for completion of error-rate measurement varies, depending on the input video signal to be recorded.<br>(The more the motion in the input video signal to be recorded is animated, the shorter the playback time required for completion of error-rate measurement becomes.) |

∗2 : During DVD-VIDEO error-rate measurement, even after error-rate measurement is finished, playback continues, and the display of the error rate results is retained. In this playback mode, if Error-Rate Measurement mode is exited by pressing the ESC key, then it is reentered by pressing the ESC and SIDE-B keys (or ESC and PLAY keys), the error rate will not be updated, and the previous value is displayed. To reset the previous error rate, stop disc playback.

∗3 : OK/NG judgment
In DVD/VIDEO and Video Mode recording, OK/NG judgment is displayed under the following conditions:

### Table 4: List of OK/NG threshold values

| Disc Type | Recording Mode | Finalized or not finalized | Reference Value | Display |
|---|---|---|---|---|
| DVD-VIDEO | | | $8.0 \times 10^{-4}$ | OK / NG |
| DVD-R | Video mode | Finalized | $1.0 \times 10^{-3}$ | OK / NG |
| | | Not finalized | $1.0 \times 10^{-3}$ | OK / NG |
| DVD-RW | Video mode | Finalized | $1.0 \times 10^{-3}$ | OK / NG |
| | | Not finalized | $1.0 \times 10^{-3}$ | OK / NG |

## 7.1.6 SERVICE SPECIFICATIONS OF THE PT MICROCOMPUTER (PDC117A-K)

### 1. Conditions during checking

- Ignore whether Protection mode is activated.
- Even if the unit was automatically shut down after detecting that the Protection circuit had been activated in Normal mode, you can turn the unit on without waiting for one minute.
- Only this unit can be operated without the subwoofer. (The VOLUME operations can be performed.)

### 2. How to enter Test mode

- Turn the AC power of the DVD-RW TUNER on while holding the OPEN/CLOSE and HDD/DVD keys of the unit pressed simultaneously.
- Then turn on the unit by pressing the STANDBY/ON key.
  The indications displayed on the FL display when Test mode is entered differ according to whether the unit was previously turned off normally or the unit was shut down because the Protection circuit had been activated, as shown below:

[After the power was turned off normally]

**[Indications]**

POWER ON
⇩
Volume 0
⇩
HD SERVICE

[After the power was shut down because of an abnormality in the SW section]

**[Indications]**

POWER ON
⇩
PRTCT WNG
⇩
HD SERVICE

[After the power was shut down because of a failure in the SW section]

**[Indications]**

POWER ON
⇩
PRTCT ERR
⇩
HD SERVICE

- To quit Test mode, turn the unit off by pressing the STANDBY/ON key then turn the AC power of the DVD-RW TUNER off.
- Upon quitting Test mode, the unit initializes only the data on the protection error in RAM.

### 3. Operations

- Basically, operations in Test mode are the same as those in Normal mode. However, to clearly demonstrate that it is in Test mode, when a function is switched, the indications on the FL display are as shown below:

| [Function] | [Indication] | |
|---|---|---|
| HDD/DVD | HD SERVICE | |
| TUNER | TX SERVICE | |
| ANALOG | AN SERVICE | |
| DIGITAL | D1 SERVICE | (Europe) |

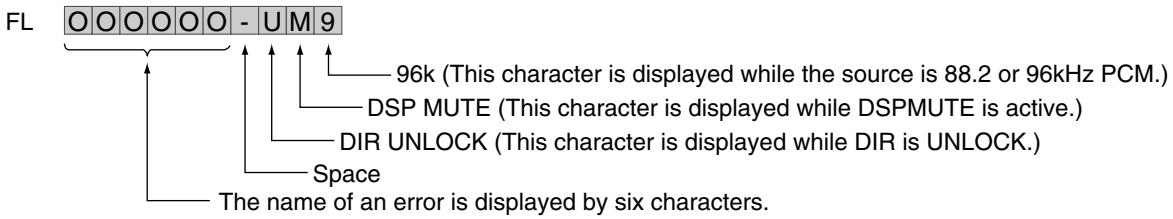
### 4. DSP error indication

- Each time the DISPLAY key on the remote control unit is pressed while the power is on, the DSP error indication and normal indication are switched alternately.

## 7.1.7 SPECIFICATIONS OF THE DSP DISPLAY

A

**• Specification of DSP error display**


FL
O O O O O O - U M 9
96k (This character is displayed while the source is 88.2 or 96kHz PCM.)
DSP MUTE (This character is displayed while DSPMUTE is active.)
DIR UNLOCK (This character is displayed while DIR is UNLOCK.)
Space
The name of an error is displayed by six characters.

B

Example)

ERR. 0 D I R E R R - U M

ERR. 1 D S P E R R - U M

ERR. 2 H R E Q - U M

ERR. 3 D S P N G - U M

C

ERR. 4 D M U T E - M

NO ERR D S P O K - 9
(The source is 88.2/96kHz.)

NO ERR D S P O K -
(The source is 88.2/96kHz.)

**• DSP error message mode**

D Press the "DISPLAY" key in service test mode, to select the mode that DSP error messages are displayed.
Press the "DISPLAY" key again to select the normal service test mode.
For this reason, make the usual function of "display" not effective in the service test mode.

E

F

### Detectable DSP Errors

The following conditions are assumed,
in order to eliminate causes other than "DSP-assy" and "between DSP-assy and microcomputers".
- Electric power is correctly supplied to DSP-assy.
- The SPDIF signal is coming to the input port of DIR.
- There is no audio output from DSP-assy, or audio output is unusual.

* "U", "M" display below is a sample.
Those character display ON/OFF depends on the state.

**• ERR_0 : –Cannot receive data from DIR–** FL DIRERR-UM
→ Communication fault has occurred somewhere between DIR (IC8201 PinNo.32 CDTO)–Level Shifter (IC8702)– µ-com (IC5501 PinNo.58 DIRDO).
→ Communication fault has occurred somewhere between the µ- com-port (*1) which has sent the signal and each IC.

**• ERR_1 : –Cannot receive data from DSP–** FL DSPERR-UM
→ Communication fault has occurred somewhere between DSP (IC8501 PinNo.144 MISO)–Level Shifter (IC8702)–µ-com (IC5501 PinNo.24 DSPDO).
→ Communication fault has occurred somewhere between the µ-com-port (*1) which has sent the signal and each IC.
→ Communication fault has occurred somewhere between the DIR and DSP.

**• ERR_2 : –There is no return value of HREQ.–** FL HREQ -UM
→ Communication fault has occurred somewhere between DSP (IC8501 PinNo.3 HREQ)–Level Shifter (IC8702)–µ-com (IC5501 PinNo.59 DSPHREQ).
→ Communication fault has occurred somewhere between the µ-com-port (*1) which has sent the signal and each IC.
→ Communication fault has occurred somewhere between the DIR and DSP.

**• ERR_3 : –ERR information from DSP–** FL DSP NG-UM
→ Communication fault has occurred somewhere between the µ-com-port (*1) which has sent the signal and each IC. (especially the fault inside DSP)
→ Communication fault has occurred somewhere between the DIR and DSP.

**• ERR_4 : –DECOMUTE continues being LOW(MUTE).–** FL DMUTE -M
→ Communication fault has occurred somewhere between DSP (IC8501 PinNo.21 PB12 MUTE)–Level Shifter (IC8702)–µ-com (IC5501 PinNo.60 DECMUTE).
→ Communication fault has occurred somewhere between the É com-port (*1) which has sent the signal and each IC.
→ Communication fault has occurred somewhere between the DIR and DSP.

Although the following are not errors, they are displayed separately and are helpful in finding a solution.

**• INFO_0 : –DIRERR is HIGH (UNLOCK) in digital function.–** FL DSP OK-UM
If DIRERR continues being HIGH (UNLOCK) without the above-mentioned error display.
→ Communication fault has occurred in somewhere between DIR (IC8201 PinNo.36 INT0)–Level Shifter (IC8702)–µ-com (IC5501 PinNo.57 DIRERR).

**• INFO_1 : –DSPMUTE is LOW (MUTE).–** FL DSP OK-M
If DSPMUTE continues being LOW (MUTE) without the above-mentioned error display.
→ Communication fault has occurred in somewhere between µ-com (PinNo.62 XDSPMUTE)–connector (CN8011 No.19 MUTEOUT).

**• INFO_2 : –Loading 88.2kHz/96kHz PCM–** FL DSP OK-9
DSP function is limited when this information is displayed.

Notes :
Only the high priority error (near to ERR_0) is displayed when the multiplel errors have occurred.

When the analog audio output of a DSP module is unusual but the above error information is not displayed, the fault is probably in the CODEC IC (IC8401) and the peripheral circuits.
As the µ-com has not received data from the CODEC IC, it cannot detect the fault and display the error information.

*1 : μ-com-port which has sent the signal to IC

| IC5501 μ-com port | | | IC8201 DIR port | | IC8401 CODEC port | |
|---|---|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name | Pin No. | Pin Name |
| No.25 | DSPCLK | → | No.34 | CCLK | No.42 | CCLK |
| No.23 | DSPDI | → | No.33 | CDTI | No.43 | CDTI |
| No.67 | DIRCS | → | No.35 | CSN | No.41 | CSN |
| No.66 | DIRRST | → | No.31 | PDN | No.17 | PDN |

| IC5501 μ-com port | | | IC8501 DSP port | |
|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name |
| No.25 | DSPCLK | → | No.1 | SCK |
| No.23 | DSPDI | → | No.143 | MOSI |
| No.63 | DSPSS | → | No.2 | $\overline{SS}$ |
| No.64 | XDSPRST | → | No.44 | $\overline{RESET}$ |
| No.65 | DSPMODE | → | No.137 | MODA |

| IC5501 μ-com port | | | IC8201 DIR port | |
|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name |
| No.58 | DIRDO | ← | No.32 | CDTO |
| No.57 | DIRERR | ← | No.36 | INT0 |

| IC5501 μ-com port | | | IC8501 DSP port | |
|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name |
| No.24 | DSPDO | ← | No.144 | MISO |
| No.59 | DSPHREQ | ← | No.3 | HREQ |
| No.60 | DECMUTE | ← | No.21 | PB12 MUTE |

## 7.1.8 VIDEO ADJUSTMENT FOR SPECIFIC AREA

**Purposes:** Depending on the area, jitter may appear in a picture received by the tuner, as conditions of signals received by the tuner are different from area to area. To correct this kind of problem, the function of the System Codec AVIO control section for adjusting signals received by the tuner can be used.

**How to enter setting modes:** To enter General Setting mode, press the ESC key then the CHP/TIM key of the remote control unit for service. To enter Specific Channel Setting mode, press the DIG/ANA key in General Setting mode.

**How to exit setting modes:** Press the ESC key. The setting mode is exited, the OSD disappears.

### 1. General Setting mode

This mode can be entered only during recording/playback stop. In this mode, each item and its current settings are displayed on the OSD. The currently selected input mode (TUNER or LINE) is displayed. If L1, L2, L3 or DV is selected for input, general settings for the line input can be made, and if TUNER is selected, general settings for the tuner input can be made.

**[General Setting mode]** (A picture from the tuner can be viewed using the semitransparent OSD display.)

```
AVIO Specific Area Mode   Ver *.**
  Input - [ TUNER ]
  Sync AGC    :ON                    *
  Threshold   :Normal                *
  V-Sync Det  :Normal                *
  Std Det     :Normal                *
  HD Err Det  :Normal                *
```

∗ : setting is the default.

**Table 1: Key operations in General Setting mode** (effective only during recording/playback stop)

| Key | Operation | Setting (∗: Default) | Remarks |
|---|---|---|---|
| INPUT SELECT, CHANNEL +/– (∗R) (∗2) | Switches inputs or channels. | TUNER / LINE | – |
| [SIDE A], [SIDE B] (∗1) | Sets Sync AGC. | ON (∗) / OFF | – |
| [Rev ×3], [×3 Fwd] (∗1) | Sets Threshold level. | (∗) Normal<br>Auto Threshold Level<br>Manual Threshold Level<br>Pedestal Level | – |
| [Rev CHAPTER SKIP] [CHAPTER SKIP Fwd] (∗1) | Sets Threshold level. | According to the setting of Threshold, the values can be changed within the range mentioned below. | – |
| | | • Normal:<br>The value is fixed, with no display of the value. | – |
| | | • Auto Threshold Level:<br>0-8 (Default: 0) | – |
| | | • Manual Threshold Level:<br>0-8 (Default: 0) | – |
| | | • Pedestal Level:<br>0-8 (Default: 0) | – |
| [Rev SCAN], [SCAN Fwd] (∗1) | Sets V-Sync Det. | Normal (∗) /Short/Long | – |
| [Rev STILL STEP], [STILL STEP Fwd] (∗1) | Sets Std Det. | Normal (∗) /Non STD | – |
| [SPEED +], [SPEED -] (∗1) | HD Err Det | Normal (∗) /Fast/Stop | |
| CLEAR (∗1) | Initializes the setting of General Setting mode. | – | Pressing the key resets all settings (①-③ of Table 2) of General Setting mode to the initial values. Settings of Specific Channel Setting mode are not affected (they are retained). |
| ESC | Exits AVIO setting for specific areas, clearing the OSD. (Tuner screen appears) | – | – |

∗R: Refers to keys on the remote control unit supplied with this unit. The keys without "R" refer to the remote control unit for service.

∗1 : If a setting value is changed, that is immediately reflected, and the data are written to nonvolatile memory. The setting data to be stored in nonvolatile memory in General Setting mode are as shown in Table 2 below:

**Table 2: Setting data to be stored in nonvolatile memory in General Setting mode**

| Selectable settings for TUNER/LINE / Setting item | TUNER | LINE |
|---|---|---|
| ① Sync AGC | ON or OFF | Same as TUNER |
| ② Threshold | Normal, Auto Threshold Level, Manual Threshold Level, or Pedestal Level | Same as TUNER |
| ③ Threshold LEVEL | 0 - 8 | Same as TUNER |
| ④ V-Sync Det | Normal, Short, or Long | Same as TUNER |
| ⑤ Std Det | Normal or Non STD | Same as TUNER |
| ⑥ HD Error | Normal, Fast, or Stop | Same as TUNER |

∗ The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.
∗ If the software for the system-control computer is downloaded, the setting values are initialized to default regardless of its having or not having the function of resetting to the state at the time of shipment. If the software for the system-control computer is downloaded to a disc, initialization of setting values in General Setting mode is performed as follows:
( i ) When the software for the system-control computer with the function of resetting to the state at the time of shipment is downloaded to a disc: The setting values in General Setting mode are initialized to default.
( ii ) When the software for the system-control computer without the function of resetting to the state at the time of shipment is downloaded to a disc: The setting values in General Setting mode are not initialized to default (The setting values before downloading will be retained).

∗2 In General Setting mode, when the displayed channel has its individual settings, the indications on the screen are as shown in below:

**[Display in General Setting mode when the channel currently displayed has specific settings]**

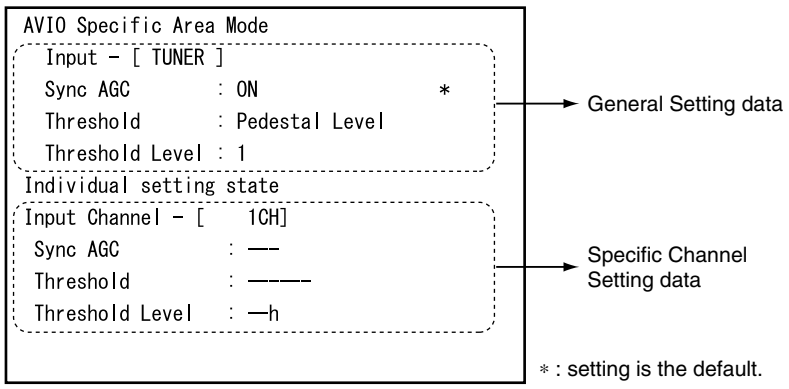
```
AVIO Specific Area Mode   Ver*.**
  Input - [ TUNER ]
  Sync AGC    :ON                  *
  Threshold   :Normal              *
  V-Sync Det  : Normal             *
  Std Det     : Normal             *
  HD Err Det  : Normal             *

  This channel is set up
  individually.
```

## 2. Specific Channel Setting mode

This mode is entered when the DIG/ANA key is pressed in General Setting mode. In this mode, specific settings can be made for up to 12 channels. For channels that do not have specific settings, the settings of General Setting mode are applied.

**[Display in Specific Channel Setting mode]** (A picture from the tuner can be viewed using the semitransparent OSD display.)


AVIO Specific Area Mode
Input - [ TUNER ]
Sync AGC : ON *
Threshold : Pedestal Level
Threshold Level : 1
Individual setting state
Input Channel - [ 1CH]
Sync AGC : ——
Threshold : ————
Threshold Level : —h
General Setting data
Specific Channel Setting data
∗ : setting is the default.

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (--).
  If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.

**Table 3: Key operations in Specific Channel Setting mode**
(effective only during recording/playback stop)

| Key | Operation | Setting (∗: Default) | Remarks |
|---|---|---|---|
| DIG/ANA | General Setting mode and Specific Channel Setting mode are alternately selected. | – | – |
| INPUT SELECT, CHANNEL +/– (∗R) | Each time the Input Selector or channel is changed, the general setting data and specific channel setting data on the display are changed. | – | On the display of General Setting mode, only the selected input, i.e., TUNER or LINE is changed. |
| [Rev ×3], [×3 Fwd] (∗3) | Sync AGC setting for an individual channel is performed. | ON (∗) / OFF | – |
| [Rev CHAPTER SKIP] [CHAPTER SKIP Fwd] (∗3) | The Threshold type can be selected. | (∗) Normal<br>Auto Threshold Level<br>Manual Threshold Level<br>Pedestal Level | When the Threshold type is changed, the corresponding Threshold Level is displayed. |
| [Rev SCAN], [SCAN Fwd], [Rev STILL STEP], [STILL STEP Fwd] (∗3) | The Threshold Level can be set. | According to the selected Threshold type, the value can be changed in the range shown below: | – |
| | | • In a case of Normal: The level is fixed, with no indication of its level. | – |
| | | • In a case of Auto Threshold Level: 0-8 (Default: 0) | ◄II STILL STEP: Each time this key is pressed, the number decreases one by one in the range of 0-8, cyclically. STILL STEP II►: Each time this key is pressed, the number increases one by one in the range of 0-8, cyclically. |
| | | • In a case of Manual Threshold Level: 0-8 (Default: 0) | |
| | | • In a case of Pedestal Level: 0-8 (Default: 0) | |
| PLAY (∗3) | All channels that have individual setting data will be canceled, and the individual data that have been stored in nonvolatile memory will be reset to default. | – | All data stored in nonvolatile memory shown in ① to ④ of Table 4 will be initialized. The General Setting data will not be changed (will be retained). |
| CLEAR (∗3) | If the currently selected channel has its individual setting, that setting will be canceled. By canceling the individual setting for that channel, the number of remaining channels that can have individual settings will be increased by one. | – | All the individual channel setting data for the currently selected channel are reset to the initial values. The General Setting data will not be changed (will be retained). |
| PAUSE (∗3) | The specific-channel-setting data for the currently selected channel are reset to default. | – | The General Setting data will not be changed (will be retained). |
| ESC | To quit the AVIO setting mode for specific-area setting and clear the On-Screen Display (the screen will return to that for the tuner) | – | – |

∗R: Refers to keys on the remote control unit supplied with this unit. The keys without "R" refer to the remote control unit for service.

∗3 : Setting data to be stored in nonvolatile memory in General Setting mode are shown in Table 4:

**Table 4: Setting data to be stored in General Setting mode**

| Setting Item | Selectable Value |
|---|---|
| ① Channel stored in memory | Any channel among all tuner or line channels (min: 0, max: 12) |
| ② SYNC AGC | ON or OFF (stored in memory for each channel that has individual settings) |
| ③ Threshold | Normal, Auto Threshold Level, Manual Threshold Level, or Pedestal Level (stored in memory for each channel that has individual settings) |
| ④ Threshold LEVEL | 0-8 (stored in memory for each channel that has individual settings) |

* The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.
* If the software for the system-control computer is downloaded, the setting values are initialized to default regardless of its having or no having the function of resetting to the state at the time of shipment. If the software for the system-control computer is downloaded to a disc, initialization of setting values in Specific Channel Setting mode is performed as follows:
  (i) When the software for the system-control computer with the function of resetting to the state at the time of shipment is downloade to a disc: The setting values in Specific Channel Setting mode are initialized to default.
  (ii) When the software for the system-control computer without the function of resetting to the state at the time of shipment is downloaded to a disc: The setting values in Specific Channel Setting mode are not initialized to default (The setting values before downloading will be retained).

## • Indication when the maximum number (12) of channels have individual settings

When 12 channels have individual settings, and if a channel that has individual settings is currently selected [see Fig. 3-(a)], the settin data for that channel are displayed on the screen, and they can be changed. When a channel that does not have individual settings is currently selected, the indication will be as shown in Fig. 3-(b), and the setting data cannot be changed. (If you wish to set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.)

**[When 12 channels have individual settings, and if a channel that has individual settings is currently selected]**

```
AVIO Specific Area Mode
  Input - [ TUNER ]
  Sync AGC         : ON                      *
  Threshold        : Manual Threshold Level
  Threshold Level  : 2
Individual setting state
Input Channel - [    1CH ]
  Sync AGC          : ON                      *
  Threshold         : Manual Threshold Level
  Threshold Level   : 3
```

**[When 12 channels have individual settings, and if a channel that does not have individual settings is currently selected]**

```
AVIO Specific Area Mode
  Input - [ TUNER ]
  Sync AGC         : ON                      *
  Threshold        : Manual Threshold Level
  Threshold Level  : 3
Individual setting state
  Sorry !
  You can store only 12 channels
  for Specific Area mode.
```

## 7.1.9 AGING MODE

**Notes:**
Commands from the remote control unit are accepted during Aging mode.
If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
Cancel timer settings before entering Aging mode.
Set the recording rate beforehand. It cannot be changed during Aging mode.

*** Be aware that all recorded data are deleted when the aging for the DVD-RW and HDD is executed.**

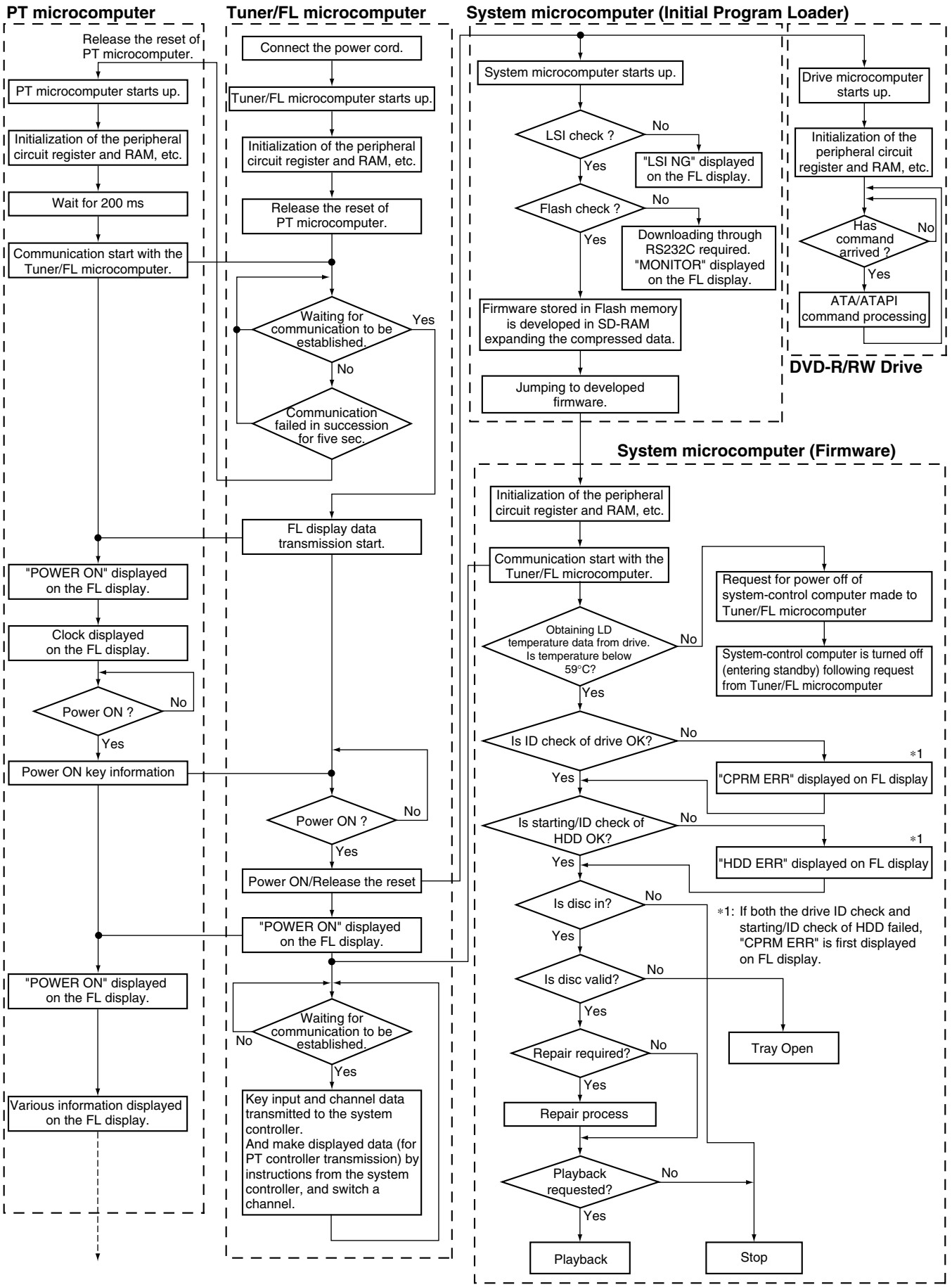
**Table 1: Aging for the DVD-RW and DVD-R**

| | Aging for the DVD-RW | Aging for the DVD-R |
|---|---|---|
| To enter Aging mode | Press the DVD key to switch to DVD. Install a recordable DVD-RW disc. After disc detection, press the ESC key then the REP.B key on the remote control unit for servicing to enter Aging mode. | Press the DVD key to switch to DVD. Install a recordable DVD-R disc. After disc detection, press the ESC key then the REP.B key on the remote control unit for servicing to enter Aging mode. |
| To quit Aging mode | Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode. This also results in the following:<br>• If during recording: Recording is stopped.<br>• If during playback: Playback is paused.<br>• If during initialization: The unit stops after initialization is finished.<br>• If the tray is being opened/closed: The unit stops after the tray is opened/closed. | Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode. This also results in the following:<br>• If during recording: Recording is stopped.<br>• If during playback: Playback is paused. |
| Function | During Aging mode, the following operations are repeated in the order shown below.<br>① The tray opens.<br>② The tray closes.<br>③ Initialization<br>④ Recording for 60 minutes<br>⑤ Playback for 45 minutes<br><br>③ Initialization is performed according to the setting specified in "DVD-RW automatic initialization" (accessed by selecting "Unit Setting" then "Option").<br><br>During Aging, the number of loops is indicated on the FL display, as shown below.<br>[AGING 0001]<br><br>If an error is generated, the aging operation stops.<br>**Note:**<br>Indications on the FL display are retained, and this information is also retained as an OSD. | During Aging mode, the following operations are repeated in the order shown below.<br>① The tray opens.<br>② The tray closes.<br>③ Recording for 1 minute<br>④ Recording pause for 6 minutes<br>⑤ Recording stops.<br>⑥ Playback for 1 minute<br>⑦ Playback pause for 6 minutes<br>⑧ Playback stops.<br>**Note:**<br>A continuous test of the above operations is possible for approximately 23 hours.<br><br>After ② the tray closes, disc detection is performed, and if 99 titles have already been registered, the unit stops there. The number of loops is retained and indicated on the FL display. An error indication is retained as an OSD.<br><br>During Aging, the number of loops is indicated on the FL display, as shown below.<br>[AGING 0001]<br><br>If an error is generated, the aging operation stops.<br>**Note:**<br>Indications on the FL display are retained, and this information is also retained as an OSD.<br><br>**Note:**<br>Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging. |

**Table 2: Aging for the HDD**

| | Aging for the HDD |
|---|---|
| To enter Aging mode | Press the HDD key to switch to HDD. Press the ESC key then the REP.B key on the remote control unit for servicing to enter Aging mode. |
| To quit Aging mode | Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode. This also results in the following:<br>• If during recording: Recording is stopped.<br>• If during playback: Playback is paused.<br>• If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased. |
| Function | During Aging mode, the following operations are repeated in the order shown below.<br>① Erasure of all the memory data from the HDD<br>② Recording for 60 minutes<br>③ Playback for 60 minutes<br><br>During Aging, the number of loops is indicated on the FL display, as shown below.<br>[AGING 0001]<br><br>If an error is generated, the aging operation stops.<br>**Note:**<br>Indications on the FL display are retained, and this information is also retained as an OSD. |

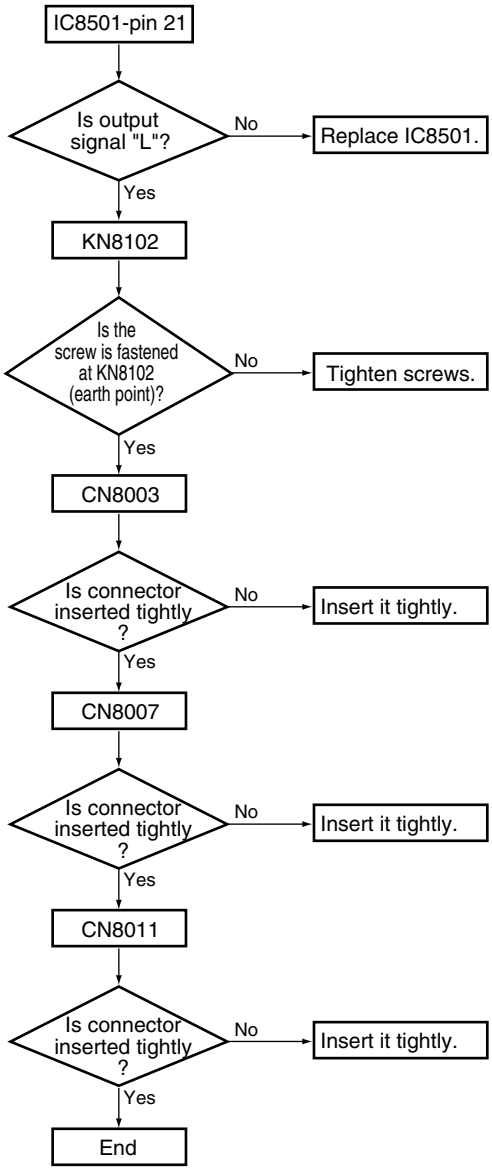
## 7.1.10 SETUP SEQUENCE


PT microcomputer
Tuner/FL microcomputer
System microcomputer (Initial Program Loader)
Release the reset of PT microcomputer.
PT microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Wait for 200 ms
Communication start with the Tuner/FL microcomputer.
"POWER ON" displayed on the FL display.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON key information
"POWER ON" displayed on the FL display.
Various information displayed on the FL display.
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Release the reset of PT microcomputer.
Waiting for communication to be established.
Yes
No
Communication failed in succession for five sec.
FL display data transmission start.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller.
And make displayed data (for PT controller transmission) by instructions from the system controller, and switch a channel.
System microcomputer starts up.
LSI check ?
No
Yes
"LSI NG" displayed on the FL display.
Flash check ?
No
Yes
Downloading through RS232C required.
"MONITOR" displayed on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
DVD-R/RW Drive
System microcomputer (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Obtaining LD temperature data from drive. Is temperature below 59°C?
No
Yes
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Is ID check of drive OK?
No
Yes
*1
"CPRM ERR" displayed on FL display
Is starting/ID check of HDD OK?
No
Yes
*1
"HDD ERR" displayed on FL display
Is disc in?
No
Yes
Is disc valid?
No
Yes
Tray Open
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Stop
*1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.

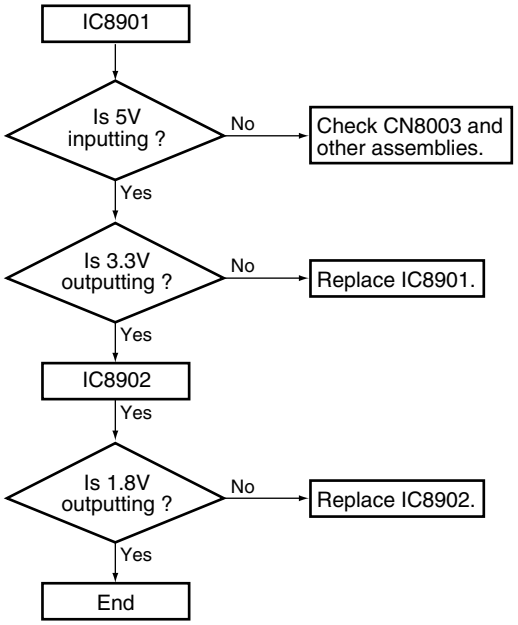
## 7.1.11 DSP TROUBLE SHOOTING

- When a sound is not out in the surround mode with the digital signal input.
- Suppose C,R parts to be poor contact and that is not damaged.
- This shows failure analysis of DSP Assy.

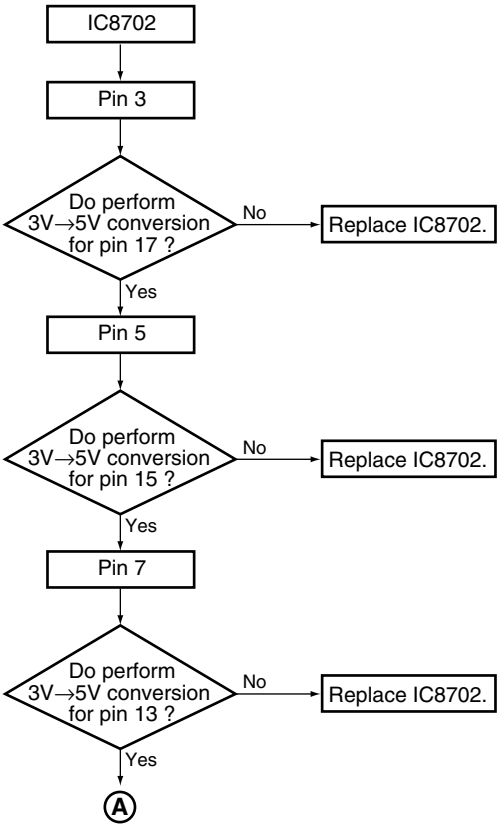
### Step 1

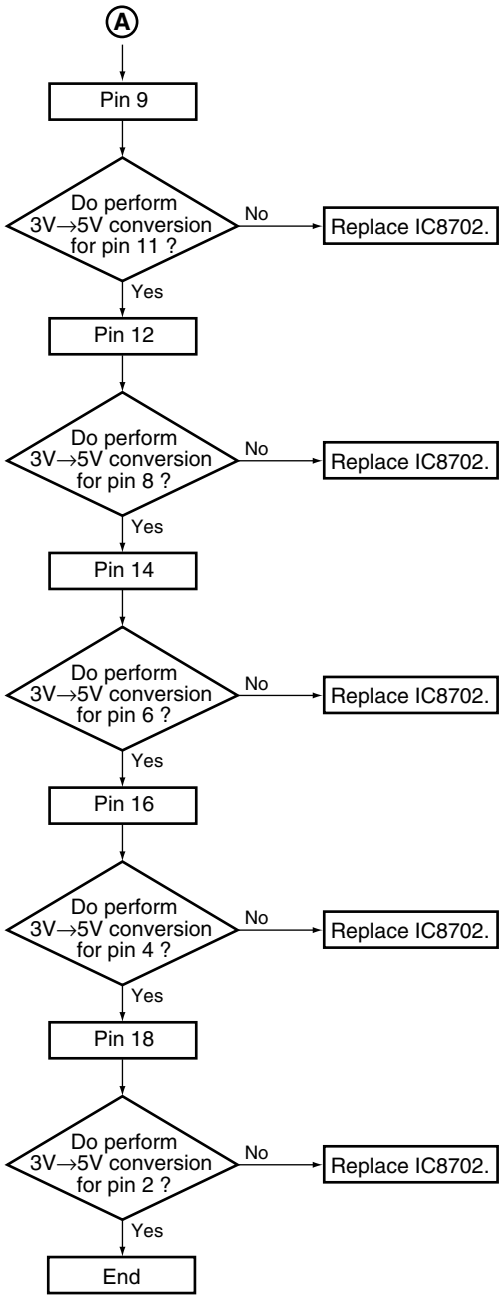


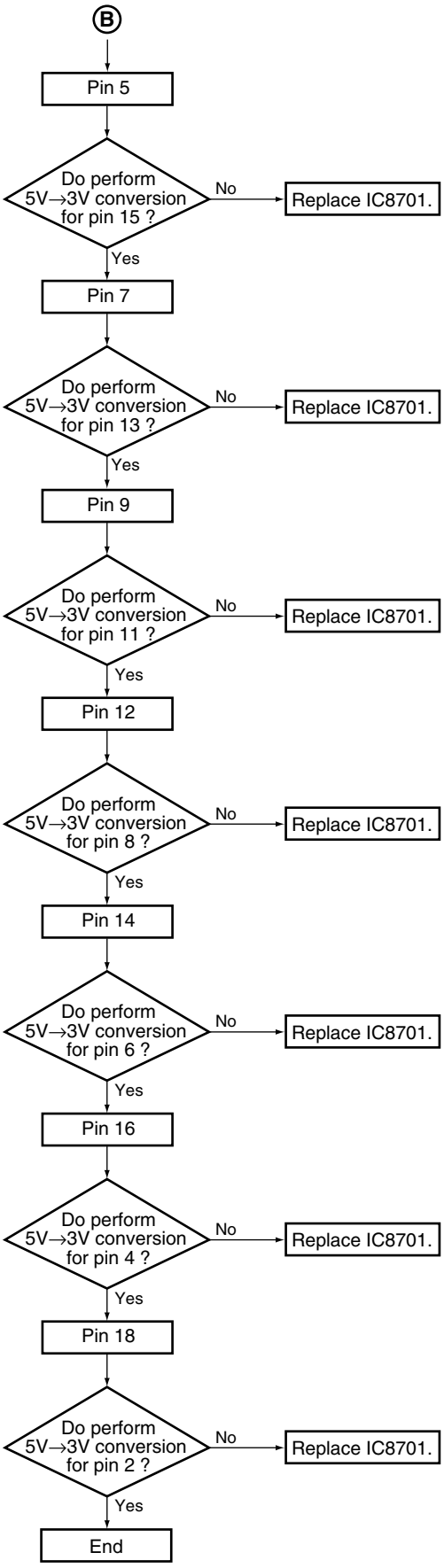

### Step 2



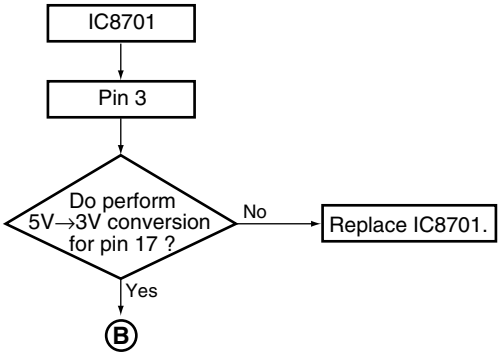

### Step 3



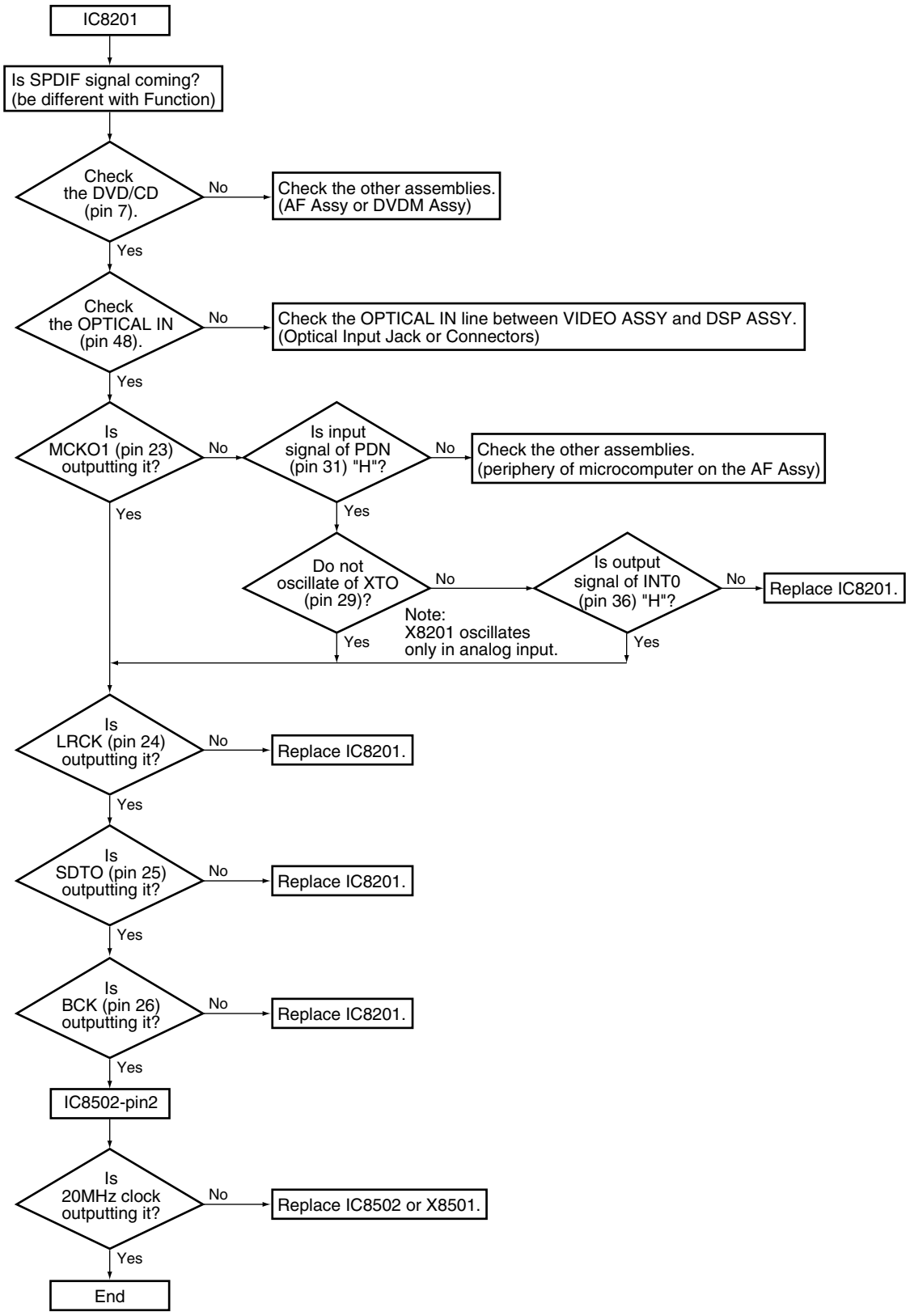

A
Pin 9
Do perform 3V→5V conversion for pin 11 ?
No
Replace IC8702.
Yes
Pin 12
Do perform 3V→5V conversion for pin 8 ?
No
Replace IC8702.
Yes
Pin 14
Do perform 3V→5V conversion for pin 6 ?
No
Replace IC8702.
Yes
Pin 16
Do perform 3V→5V conversion for pin 4 ?
No
Replace IC8702.
Yes
Pin 18
Do perform 3V→5V conversion for pin 2 ?
No
Replace IC8702.
Yes
End


B
Pin 5
Do perform 5V→3V conversion for pin 15 ?
No
Replace IC8701.
Yes
Pin 7
Do perform 5V→3V conversion for pin 13 ?
No
Replace IC8701.
Yes
Pin 9
Do perform 5V→3V conversion for pin 11 ?
No
Replace IC8701.
Yes
Pin 12
Do perform 5V→3V conversion for pin 8 ?
No
Replace IC8701.
Yes
Pin 14
Do perform 5V→3V conversion for pin 6 ?
No
Replace IC8701.
Yes
Pin 16
Do perform 5V→3V conversion for pin 4 ?
No
Replace IC8701.
Yes
Pin 18
Do perform 5V→3V conversion for pin 2 ?
No
Replace IC8701.
Yes
End

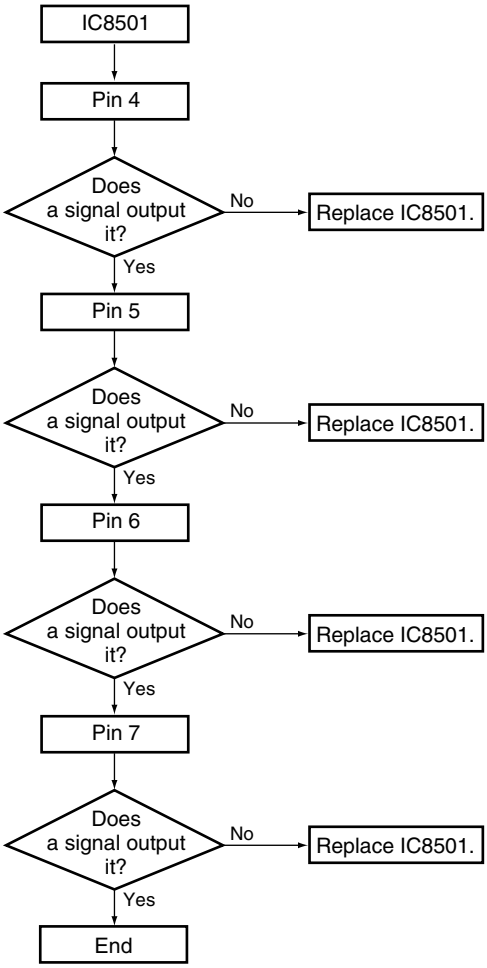
**Step 4**


IC8701
Pin 3
Do perform 5V→3V conversion for pin 17 ?
No
Replace IC8701.
Yes
B

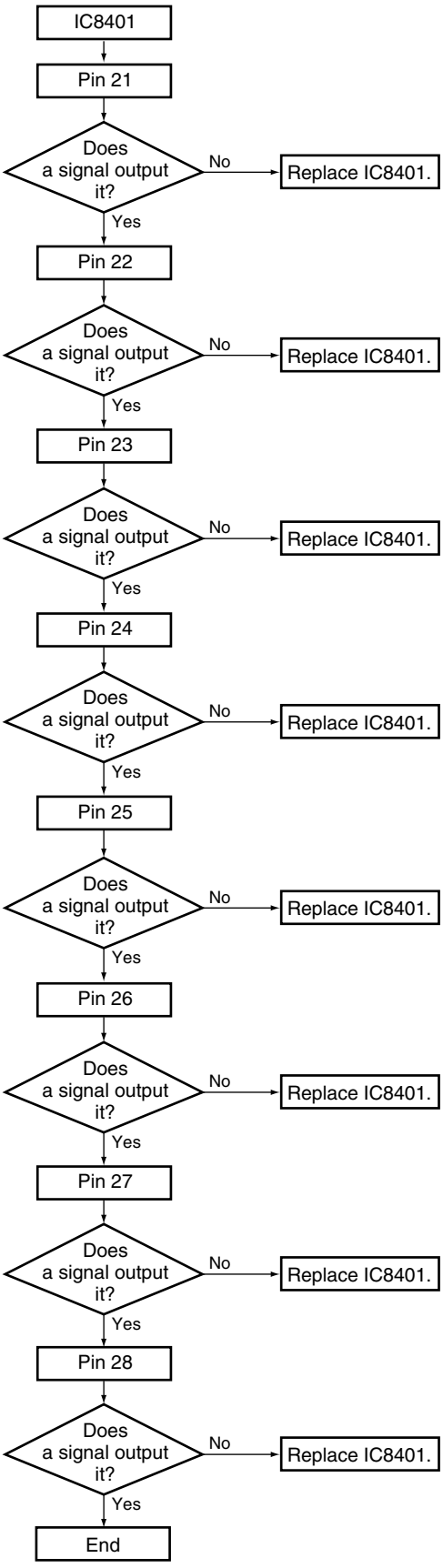
**Step 5**


IC8201
Is SPDIF signal coming? (be different with Function)
Check the DVD/CD (pin 7).
No
Check the other assemblies. (AF Assy or DVDM Assy)
Yes
Check the OPTICAL IN (pin 48).
No
Check the OPTICAL IN line between VIDEO ASSY and DSP ASSY. (Optical Input Jack or Connectors)
Yes
Is MCKO1 (pin 23) outputting it?
No
Is input signal of PDN (pin 31) "H"?
No
Check the other assemblies. (periphery of microcomputer on the AF Assy)
Yes
Yes
Do not oscillate of XTO (pin 29)?
No
Is output signal of INT0 (pin 36) "H"?
No
Replace IC8201.
Note: X8201 oscillates only in analog input.
Yes
Yes
Is LRCK (pin 24) outputting it?
No
Replace IC8201.
Yes
Is SDTO (pin 25) outputting it?
No
Replace IC8201.
Yes
Is BCK (pin 26) outputting it?
No
Replace IC8201.
Yes
IC8502-pin2
Is 20MHz clock outputting it?
No
Replace IC8502 or X8501.
Yes
End

### Step 6


IC8501
Pin 4
Does a signal output it?
No
Replace IC8501.
Yes
Pin 5
Does a signal output it?
No
Replace IC8501.
Yes
Pin 6
Does a signal output it?
No
Replace IC8501.
Yes
Pin 7
Does a signal output it?
No
Replace IC8501.
Yes
End

### Step 7


IC8401
Pin 21
Does a signal output it?
No
Replace IC8401.
Yes
Pin 22
Does a signal output it?
No
Replace IC8401.
Yes
Pin 23
Does a signal output it?
No
Replace IC8401.
Yes
Pin 24
Does a signal output it?
No
Replace IC8401.
Yes
Pin 25
Does a signal output it?
No
Replace IC8401.
Yes
Pin 26
Does a signal output it?
No
Replace IC8401.
Yes
Pin 27
Does a signal output it?
No
Replace IC8401.
Yes
Pin 28
Does a signal output it?
No
Replace IC8401.
Yes
End

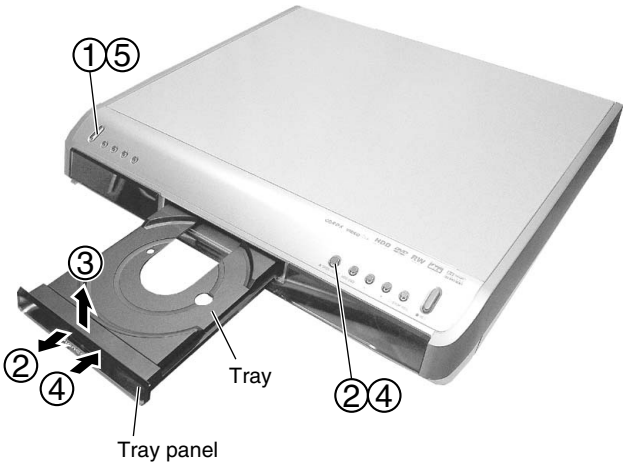
## 7.1.12 DISASSEMBLY

**Note 1 :** Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.
**Note 2 :** For performing the diagnosis shown below, the following jigs for service are required:
• Jig cable : GGD1315 (×2)

## Diagnosis of the MAIN Assy

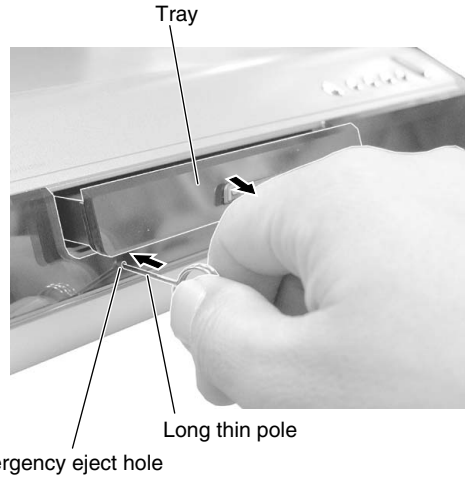
### 1 Tray panel

① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



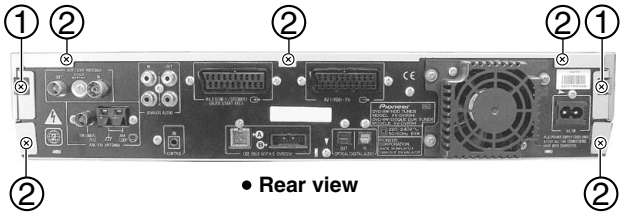

**● How to open the tray when the power cannot be on**

When the player cannot eject tray due to power failure or any other reasons, use a long thin pole and push the emergency eject hole under the tray panel to eject.
If the tray pops out a little, fully pull it out by a hand.



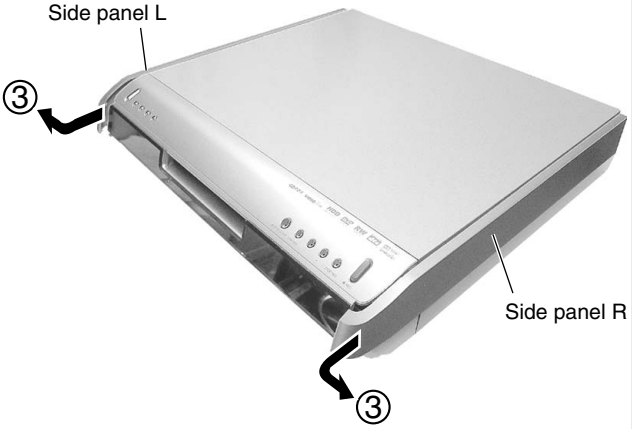

### 2 Side panel L, R and Bonnet case

① Remove the two screws.
② Remove the five screws.




**• Rear view**

③ Remove the side panel L and R.

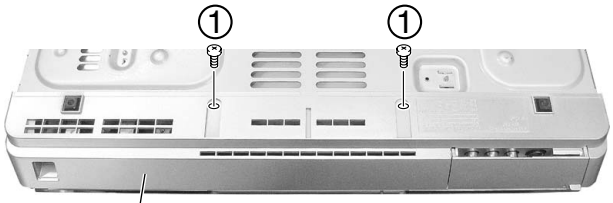



④ Remove the four screws.

⑤ Remove the bonnet case.

## 3 Front panel section

① Remove the two screws.

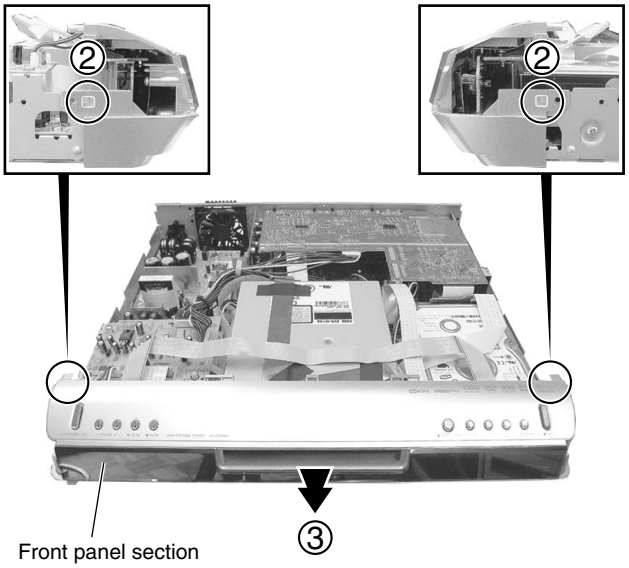



• **Bottom view**

Front panel section

② Unhook the two hooks.

③ Remove the front panel section

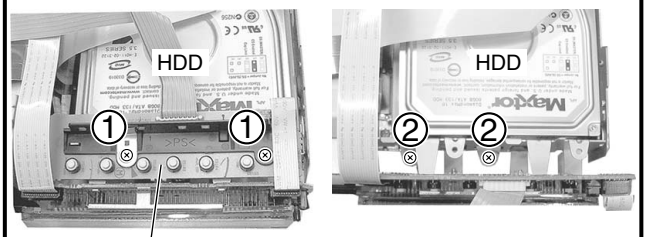



Front panel section

## 4 HDD section

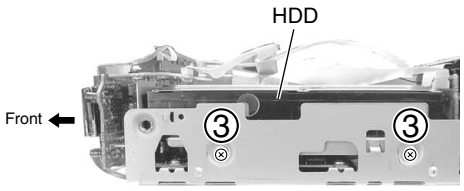
① Remove the KEY R Assy by removing the two screws.

② Remove the two screws.



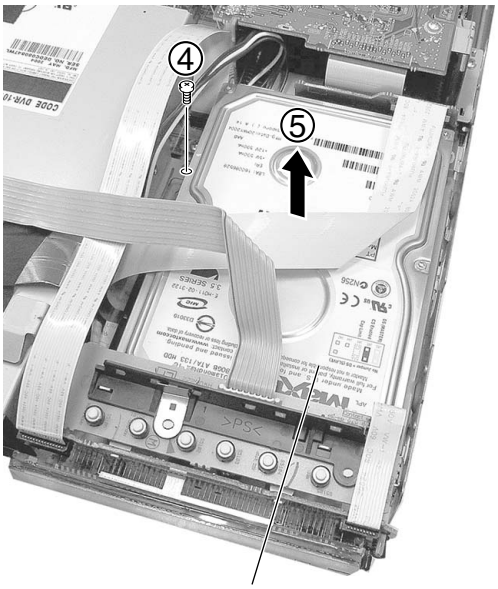

KEY R Assy

③ Remove the two screws.




④ Remove the one screw.

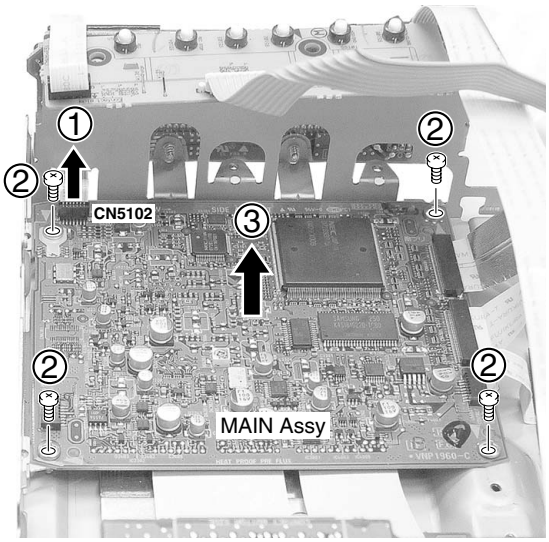
⑤ Remove the HDD with HDD base.




HDD

## 5 MAIN Assy

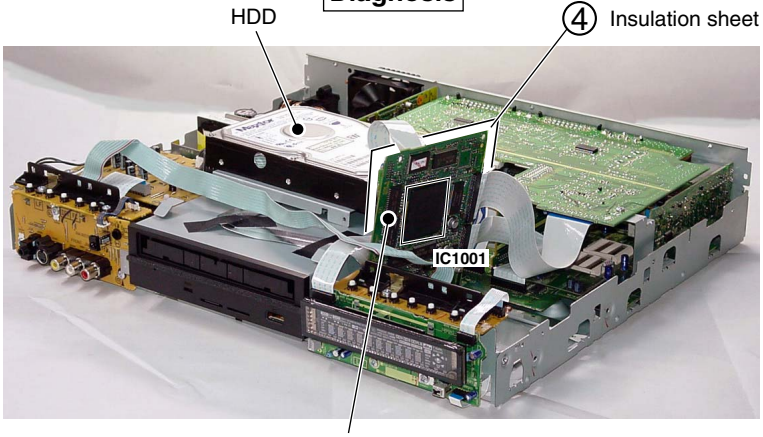
① Disconnect the one connector.
② Remove the four screws.
③ Stand the MAIN Assy.




• **Rear view**

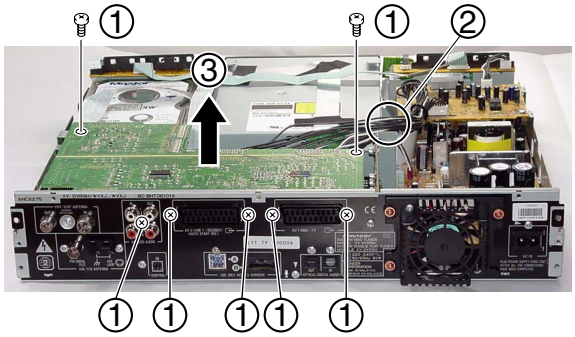
④ Insert the insulation sheet between the MAIN Assy and HDD.
⑤ Arrange the unit as shown in the photo below.

**Diagnosis**



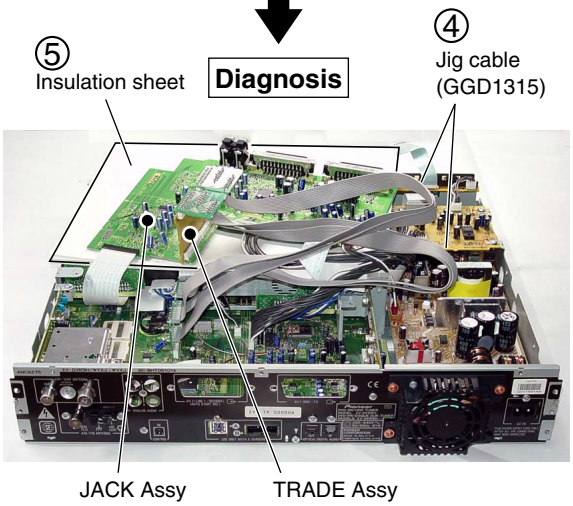

## 6 JACK Assy

① Remove the seven screws.
② Remove the wires from Wire Saddle.
③ Remove the JACK Assy and TRADE Assy.




④ Connect the jig cable.
⑤ Insert the insulation sheet between the JACK Assy and DRIVE Assy R7.
⑥ Arrange the unit as shown in the photo below.

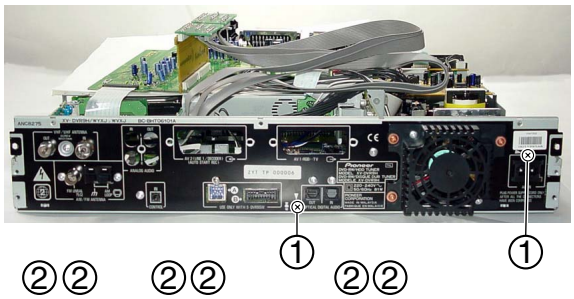
**Diagnosis**

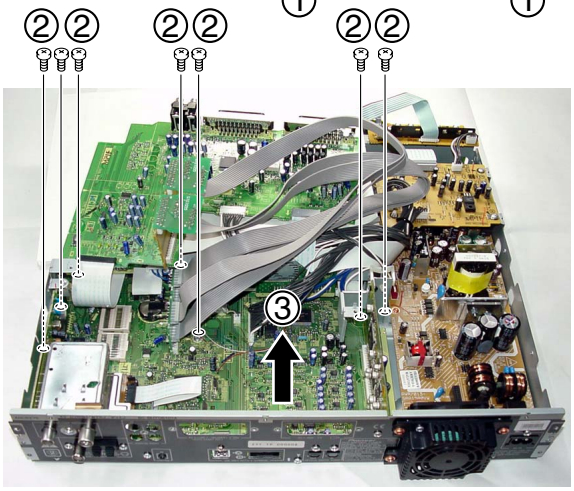



**Caution :**
Main IC (IC1001) on the MAIN Assy generate heat to arround 80 degrees. Be careful when works.

## 7 CONTROL Assy

① Remove the two screws.
② Remove the seven screws.

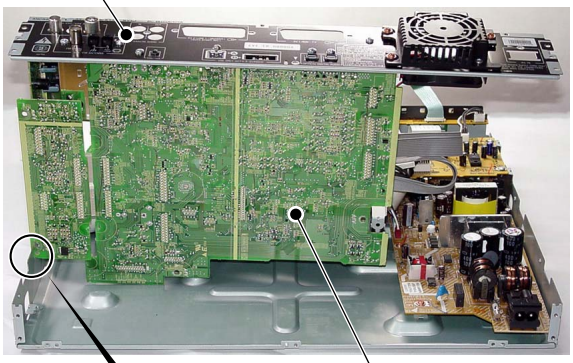


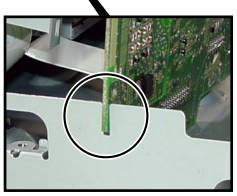


③ Stand the CONTROL Assy.
④ Arrange the unit as shown in the photo below.

Rear Panel

**Diagnosis**

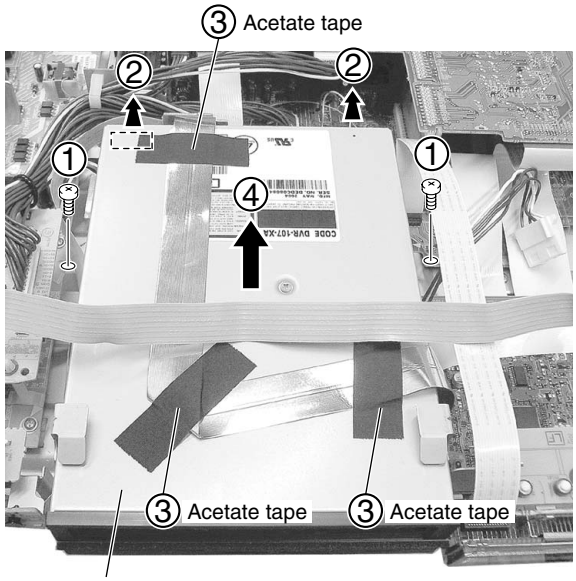




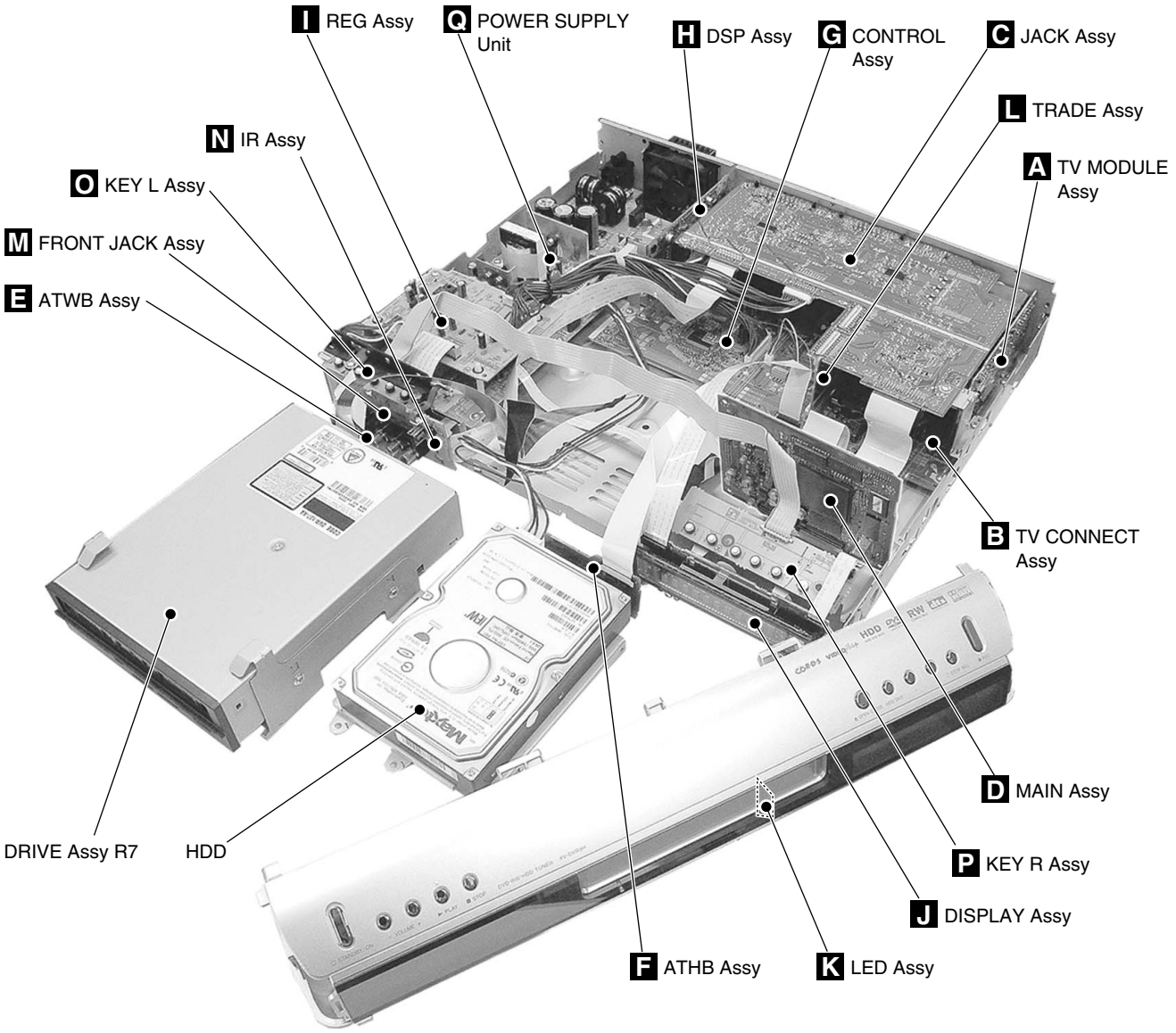
CONTROL Assy

## 8 DRIVE Assy R7 (DVD-R/RW Writer)

① Remove the two screws.
② Disconnect the two connectors.
③ Remove the three acetate tapes.
④ Remove the DRIVE Assy R7.

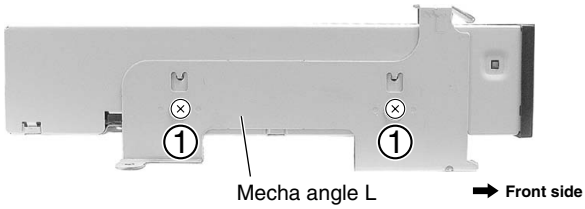


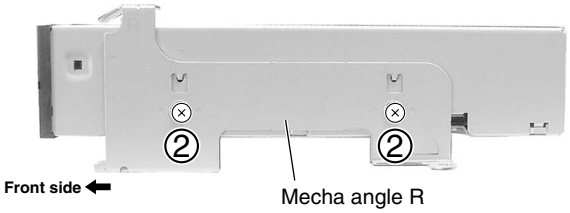
## PCB Location



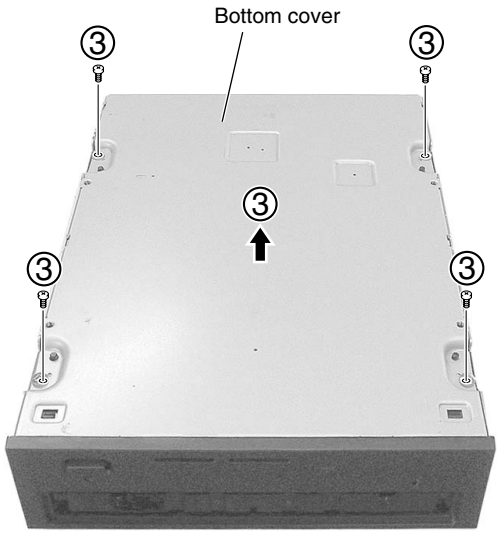
## Cleaning the pickup lens

① Remove the mecha angle L by removing the two screws.
② Remove the mecha angle R by removing the two screws.



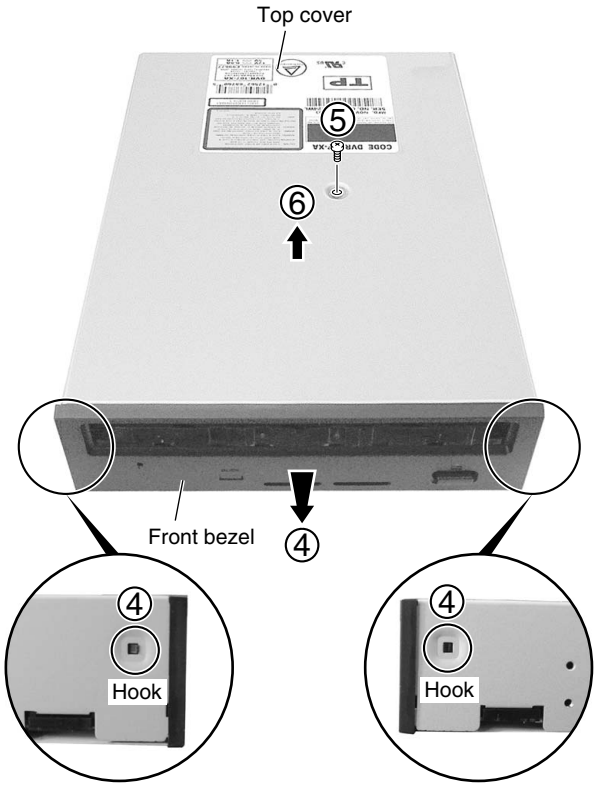




③ Remove the bottom cover by removing the four screws.



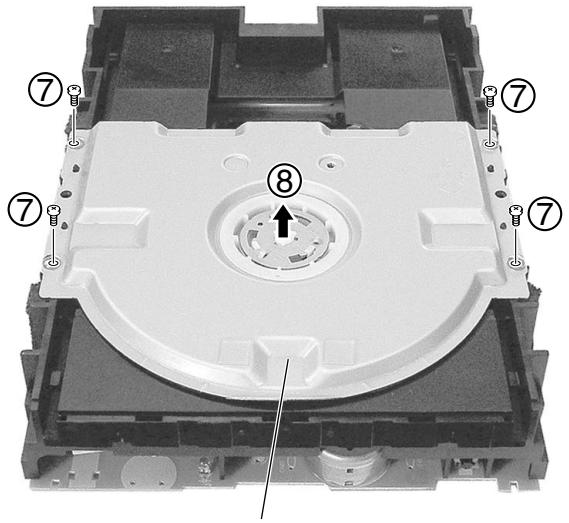

● **Bottom view**

④ Remove the front bezel by unhooking the two hooks.
⑤ Remove the one screw.
⑥ Remove the top cover.



⑦ Remove the four screws.

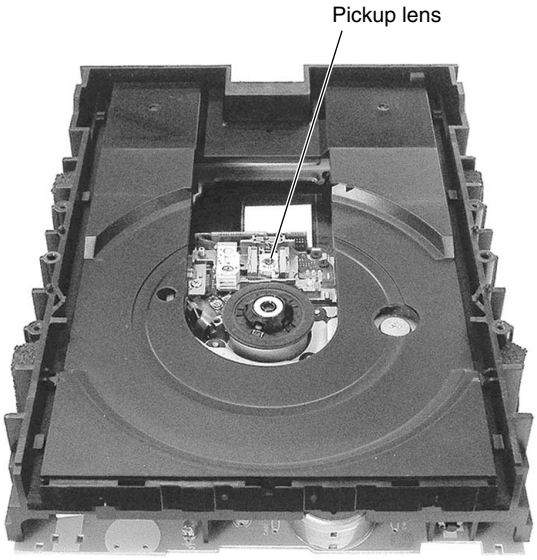
⑧ Remove the clamper section.




⑨ Clean the pickup lens.

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools :

Cleaning liquid : GEM1004
Cleaning paper : GED-008



# 7.2 PARTS

## 7.2.1 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● **List of IC**

PEG014A-K, PDC117B-K, TDA9818TS, LA73026AV, RS5C372A, LC75342M, LA73033M, AK5357VT, PST3428U, PST3809U, M65673WG-A, UPD72852AGB-8EU, UPD72893AGD-LML

## ■ PEG014A-K (CONTROL ASSY: IC801)

• TUFL Microcomputer

● **Pin Function**

| No. | Pin Name | Signal Name | I/O | Function |
|---|---|---|---|---|
| 1 | P95/ANEX0/CLK4 | XSCK_TTOA | O | Communication line of AMP controller (clock) |
| 2 | P94/DA1/TB4in | SYNC | I | C-Sync of input video (for Auto-Rec video judgement) |
| 3 | P93/DA0/TB3in | AVLINKIN | I | Input line of NexTViewLink |
| 4 | P92/TB2in/Sout3 | IR | I | Pulse input of remote control (no input signal for system product) |
| 5 | P91/TB1in/Sin3 | J_CLOCK | I | Input audio for Just clock (pulse input of tuner audio) |
| 6 | P90/TB0in/CLK3 | SYNCAFT | I | C-Sync of input video |
| 7 | BYTE | BYTE | I | Pull-down |
| 8 | CNVss | PGM | I | Communication line L: Normal, H: Download |
| 9 | P87/XCin | NC | (O) | |
| 10 | P86/XCout | LATCH_D | O | Communication line of AMP controller (Latch) |
| 11 | -RESET | XRESETIN | I | Microcomputer reset L: Reset, H: Normal |
| 12 | Xout | XOUT | O | |
| 13 | Vss | GND | – | Ground |
| 14 | Xin | XIN | I | |
| 15 | Vcc | VCC | – | Power supply |
| 16 | P85/-NMI | NMI | I | Pull-up |
| 17 | P84/-INT2 | JOGA | I | Phase VOL input |
| 18 | P83/-INT1 | SLICEONFB | I | Feedback from SLICEON pin |
| 19 | P82/-INT0 | XINTRA | I | Alarm/interval interruption |
| 20 | P81/TA4in | LED_HDD | (O) | HDD LED LED ON with H active at HDD (NC) |
| 21 | P80/TA4out | LED_DVD | (O) | DVD LED LED ON with H active at HDD (duty 100%) (NC) |
| 22 | P77/TA3in | PSAVE_MUTE | O | For noise suppression when controlling SCART power (L: Mute ON, H: Mute OFF) |
| 23 | P76/TA3out | FANPWM | O | FAN power control High speed: H fixed, Low speed: 39kHz, Stop: L fixed (NC) |
| 24 | P75/TA2in | GLINK IN | (O) | (NC) |
| 25 | P74/TA2out | GLINK OUT | (O) | (NC) |
| 26 | P73/-CTS2/-RTS2/TA1in | NC | (O) | |
| 27 | P72/CLK2/TA1out | AVLINKOUT | O | Output line of NextViewLink |
| 28 | P71/RxD2/SCL/TA0in/TB5in | SCL | I/O | I2C communication (clock) Nch open-drain |
| 29 | P70/TxD2/SDA/TA0out | SDA | I/O | I2C communication (data) Nch open-drain |
| 30 | Vss2 | GND | – | Ground |
| 31 | LP2 | LP2 | O | |
| 32 | LP3 | LP3 | O | |
| 33 | LP4 | LP4 | O | |
| 34 | Vdd2 | VDD2 | – | Power supply |
| 35 | M2 | M2 | I | Mode switch L: Normal, H: Download |
| 36 | M1 | M1 | I | Pull-down |
| 37 | P11/SLICEON | SLICEON | O | Slicer operating signal |
| 38 | P67/TxD1 | TXD | O | Communication line for firmware download/monitor |
| 39 | P66/RxD1 | RXD | I | Communication line for firmware download/monitor |

| No. | Pin Name | Signal Name | I/O | Function |
|---|---|---|---|---|
| 40 | P65/CLK1 | SCLK | (O) | Communication line for firmware download/monitor |
| 41 | P64/-CTS1/-RTS1/CLKS1 | BUSY | O | Communication line for firmware download/monitor |
| 42 | P63/TxD0 | SSTTOM | O | System controller communication line (Tuner → Main) |
| 43 | P62/RxD0 | SSMTOT | I | System controller communication line (Main → Tuner) |
| 44 | P61/CLK0 | SCK | I | System controller communication line (clock) |
| 45 | P60/-CTS0/-RTS0 | HSTTOM | O | Tuner → System handshake |
| 46 | P57/-RDY/CLKout | DLCONT | O | Voltage supply SW of FLASH-ROM writing L=Download, H=Normal operation |
| 47 | P56/ALE | WRT | O | Write signal |
| 48 | P55/-HOLD | SDAEEP | I/O | SDA line for EEPROM |
| 49 | P54/-HLDA | SCLEEP | O | SCL line for EEPROM |
| 50 | P53/BCLK | VOLCE | O | Communication line CE |
| 51 | P52/-RD | VOLDATA | O | Communication line DATA |
| 52 | P51/-WRH/-BHE | VOLCLK | O | Communication line CLK |
| 53 | P50/-WRL/-WR | DLCE | I | Signal for serial I/O mode selection (10k ohm pulled-up) |
| 54 | P47/-CS3 | NC | (O) | |
| 55 | P46/-CS2 | NC | (O) | |
| 56 | P45/-CS1 | NC | (O) | |
| 57 | P44/-CS0 | BLANK | I | BLANK signal input |
| 58 | P43/A19 | XTHROU | O | Through control of SCART1/2 L=Through, H=Connect to TV |
| 59 | P42/A18 | NC | (O) | |
| 60 | P41/A17 | EXTRGB | O | |
| 61 | P40/A16 | SWVION | O | Independent source SW for video I/O output circuit L=OFF, H=Power ON |
| 62 | P37/A15 | SWSTBY | O | Standby mode of video input selector L=Normal, H=Standby mode |
| 63 | P36/A14 | NC | (O) | |
| 64 | P35/A13 | BS15SRT | I | |
| 65 | P34/A12 | SCTHRU | O | SCART loop through control during power OFF L=Through during power OFF, H=Normal |
| 66 | P33/A11 | NC | (O) | |
| 67 | P32/A10 | NC | (O) | |
| 68 | P31/A9 | SDET2 | I | S terminal detection of Video input 2 |
| 69 | Vcc | VCC | – | Power supply |
| 70 | P30/A8 | NC | I | |
| 71 | Vss | GND | – | Ground |
| 72 | P27/A7 | DDL_INFO1 | O | DISC DOWNLOAD information |
| 73 | P26/A6 | DDL_INFO2 | O | DISC DOWNLOAD information |
| 74 | P25/A5 | DDL_INFO3 | O | DISC DOWNLOAD information |
| 75 | P24/A4 | NC | (O) | |
| 76 | P23/A3 | P_SAVEBS | O | RF through output switch L=Through OFF, H=Through ON |
| 77 | P22/A2 | NC | (O) | |
| 78 | P21/A1 | NC | (O) | |
| 79 | P20/A0 | P_CONT | O | System Power ON L=Standby, H=Power ON |
| 80 | P17/D15/-INT5 | HSATOT | I | Amp → Tuner handshake |

| No. | Pin Name | Signal Name | I/O | Function |
|---|---|---|---|---|
| 81 | P16/D14/-INT4 | HSMTOT | I | SYS → Tuner handshake |
| 82 | P15/D13/-INT3 | DCTRI | I | Change detection of audio condition |
| 83 | P14/D12 | NC | (O) | |
| 84 | P13/D11 | SU/SAPID | I | J: Bilingual detection, US: SAP detection |
| 85 | P12/D10 | ST/STID | I | J: Stereo detection, US: Stereo detection (STID) |
| 86 | P11/D9 | XRESET | O | System Reset output L=Reset, H=Normal |
| 87 | P10/D8 | LDASH | O | ColorSystem distinction signal L=Others, H=L' |
| 88 | P07/D7 | STBYQ | O | EU multiplex decoder standby mode L=Standby, H=Power ON |
| 89 | P06/D6 | LM/ | O | ColorSystem distinction signal L=Others, H=L/L' (for EU); M/N (for IBD) |
| 90 | P05/D5 | I/BG | O | ColorSystem distinction signal L=Others, H=I |
| 91 | P04/D4 | XP_SAVE | O | Power save control (SCART) L=Power save (thru OFF), H=Normal (thru ON) |
| 92 | P03/D3 | TUON | O | Tuner power L=Standby, H=Power ON |
| 93 | P02/D2 | NC | (O) | |
| 94 | P01/D1 | RSTCTL | O | Reset signal mask from the system controller |
| 95 | P00/D0 | XRST_TTOA | O | Reset output to Amp controller |
| 96 | P107/AN7/-KI3 | MODEL1 | A/D IN | Input for destination judgment |
| 97 | P106/AN6/-KI2 | MODEL2 | A/D IN | Input for destination judgment |
| 98 | P105/AN5/-KI1 | AGC | A/D IN | Field intensity detection |
| 99 | P104/AN4/-KI0 | FUNC | A/D IN | Function signal input |
| 100 | P103/AN3 | KEY2 | A/D IN | Main unit key input (No use) |
| 101 | P102/AN2 | KEY1 | A/D IN | Main unit key input (No use) |
| 102 | P101/AN1 | C/N | A/D IN | |
| 103 | Avss | GND | – | Ground |
| 104 | P100/AN0 | AFT | A/D IN | AFT voltage input |
| 105 | VREF | VREF | – | Reference voltage |
| 106 | AVcc | AVCC | – | Power supply |
| 107 | P97/-ADTRG/Sin4 | SSATOT | I | Communication line of Amp controller (AMP → Tuner) |
| 108 | Vdd1 | VDD1 | – | Power supply |
| 109 | SYNCIN | SYNCTEXT | I | Video input for sync. sep. |
| 110 | SVREF | SLICE | I | Slice level input |
| 111 | Vss1 | GND | – | Ground |
| 112 | Vdd3 | VDD3 | – | Power supply |
| 113 | CVIN1 | CVIN1 | I | Video input for teletext |
| 114 | Vss3 | GND | – | Ground |
| 115 | FSCIN | FSCIN | I | Fsc input |
| 116 | P96/ANEX1/Sout4 | SSTOA | O | Communication line of Amp controller (Tuner → AMP) |

## PDC117B-K (CONTROL ASSY: IC5501)

• PT Microcomputer

### ● Pin Function

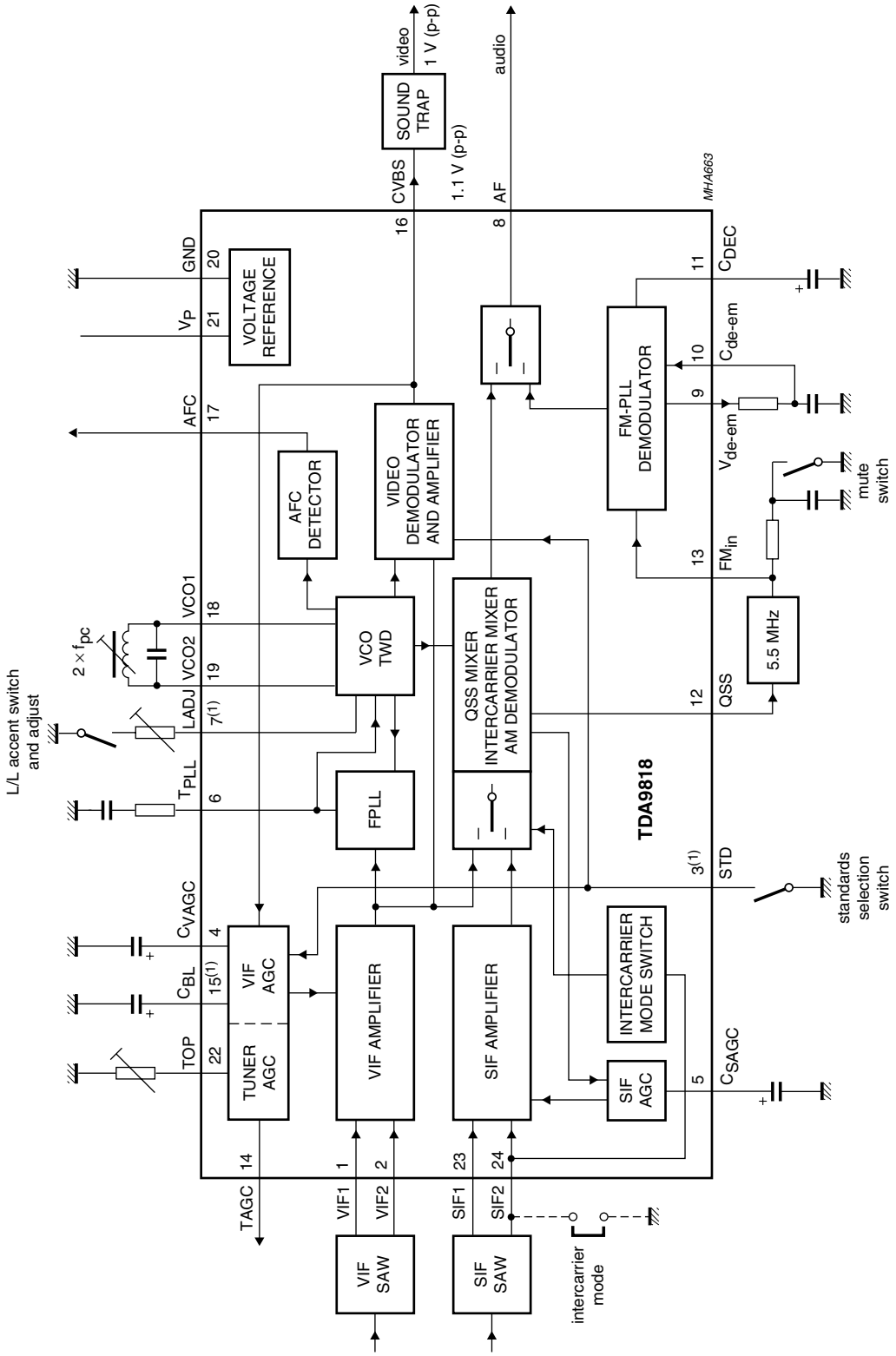
| No. | Pin Name | Signal Name | I/O | Function |
|---|---|---|---|---|
| 1 | PA3 | ATT6dB | O | Control ATT 6dB for AUDIO IN |
| 2 | PA4 | ATT10dB | O | Control ATT 10dB for AUDIO IN |
| 3 | PA5 | NC | O | |
| 4 | P70/INT0/T0LCP/AN8 | XPDOWNDET | I | Power failure detection input(Interruption) |
| 5 | P71/INT1/T0HCP/AN9 | XWMUTE | O | WIRE LESS MUTE request |
| 6 | P72/INT2/T0IN | RDSCLK | I(O) | Clock input from RDS decoder (without RDS: Low output) |
| 7 | P73/INT3/T0IN | REMOCON | I | REMOCON signal input(Interruption) |
| 8 | RES# | XRESET | I | Microcomputer reeset input |
| 9 | XT1/AN10 | XT1 | – | (When this port don't use, please connect VDD) |
| 10 | XT2/AN11 | XT2 | – | (When this port don't use, please set open) |
| 11 | VSS1 | VSS1 | – | Ground |
| 12 | CF1 | CF1 | – | |
| 13 | CF2 | CF2 | – | |
| 14 | VDD1 | VDD1 | – | Power supply |
| 15 | P80/AN0 | SIMUKE | I | Destination distinction input |
| 16 | P81/AN1 | NC | O | |
| 17 | P82/AN2 | NC | O | |
| 18 | P83/AN3 | KEY1 | I | Key1 input |
| 19 | P84/AN4 | KEY2 | I | Key2 input |
| 20 | P85/AN5 | NC | O | |
| 21 | P86/AN6 | (TEMP) | O | |
| 22 | P87/AN7 | XPROTECT | I | Protection and Fan Error detection input |
| 23 | P10/SO0 | DSPDI | O | Data output to DSP (MOTOROLA) and DIR |
| 24 | P11/SI0/SB0 | DSPDO | I | Data input from DSP (MOTOROLA) |
| 25 | P12/SCK0 | DSPCLK | O | Clock output to DSP (MOTOROLA) and DIR |
| 26 | P13/SO1 | FLCS | O | Chip enable for FL driver |
| 27 | P14/SI1/SB1 | FLDAT | O | Data for FL driver & LED DRIVER |
| 28 | P15/SCK1 | FLCLK | O | Clock for FL driver & LED DRIVER |
| 29 | P16/T1PWML | LATCH | I | DVDRW LATCH input |
| 30 | P17/T1PWMH/BUZ | HPDET | I | Detect to insert headphone |
| 31 | PE0 | XRDY | O | DVDRW XRDY output |
| 32 | PE1 | XAVOUTMUTE | O | AV OUTPUT AUDIO MUTE ON/OFF |
| 33 | PE2 | STEST | I | Set SERVICE TEST MODE for service (Perform the LINE TEST MODE with remote control unit) |
| 34 | PE3 | UTEST | I | Set UNITCHECK for checker |
| 35 | PE4 | XHPMUTE | O | HP MUTE ON/OFF |
| 36 | PE5 | XRECMUTE | O | AUIDIO OUTPUT MUTE ON/OFF |
| 37 | PE6 | MUTEMASK1 | O | EURO SCART AV1 AUDIO OUT MUTE MASK |
| 38 | PE7 | MUTEMASK2 | O | EURO SCART AV2 AUDIO OUT MUTE MASK |
| 39 | VSS4 | VSS4 | – | Ground |
| 40 | VDD4 | VDD4 | – | Power supply |

| No. | Pin Name | Signal Name | I/O | Function |
|---|---|---|---|---|
| 41 | PF0 | LED BLUE | O | BLUE LED |
| 42 | PF1 | LED AMB | O | AMBER LED |
| 43 | PF2 | RYR | O | REAR RELAY ON/OFF |
| 44 | PF3 | RYFSC | O | FRONT/SW/CENTER RELAY ON/OFF |
| 45 | PF4 | XFLRST | O | Reset for FL driver |
| 46 | PF5 | FLPOW | O | FL power sw control |
| 47 | PF6 | (SYSPOW) | O | |
| 48 | PF7 | DTSDMIX | O | Cntrol of gain-up for dts down-mix |
| 49 | SI2P0/SO2 | SO | O | DVDRW data output (AMP side output) |
| 50 | SI2P1/SI2/SB2 | SI | I | DVDRW data input (AMP side input) |
| 51 | SI2P2/SCK2 | XSCK | I | DVDRW clock input |
| 52 | SI2P3/SCK20 | SWFMIX | O | Control for subwoofer mix |
| 53 | PWM1 | NC | – | |
| 54 | PWM0 | FANCONT | O | fan control1 |
| 55 | VDD2 | VDD2 | – | Power supply |
| 56 | VSS2 | VSS2 | – | Ground |
| 57 | P00 | DIRERR | I | LOCK/UNLOCK from DIR |
| 58 | P01 | DIRDO | I | Data input from DIR |
| 59 | P02 | DSPHREQ | I | Error detection from DSP (MOTOROLA) |
| 60 | P03 | DECMUTE | I | Detection of 1stDSP boot success from DSP MODULE |
| 61 | P04 | XTL0 | O | Selection X'tal to DIR |
| 62 | P05/CKO | XDSPMUTE | O | MUTE requeat to DSP MODULE |
| 63 | P06/T6O | DSPSS | O | Slave selection to DSP (MOTOROLA) |
| 64 | P07/T7O | XDSPRST | O | RESET to DSP (MOTOROLA) MODULE |
| 65 | P20/INT4/T1IN | DSPMODE | O | MODE selection(ROM/RAM) to DSP(MOTOROLA) |
| 66 | P21/INT4/T1IN | DIRRST | O | Reset to DIR |
| 67 | P22/INT4/T1IN | DIRCS | O | Chip select to DIR |
| 68 | P23/INT4/T1IN | XSWDET | I | SW DETECT |
| 69 | P24/INT5/T1IN | (FANERR) | I | (STANDBY) Fan Error detection input |
| 70 | P25/INT5/T1IN | (FANCONT) | O | fan control1 |
| 71 | P26/INT5/T1IN | BEATCUT2 | O | BEATCUT Control 2 |
| 72 | P27/INT5/T1IN | DLINF1 | I | Download Information1 |
| 73 | P30/PWM4 | DLINF2 | I | Download Information2 |
| 74 | P31/PWM5 | DLINF3 | I | Download Information3 |
| 75 | P32/UTX1 | SR+Tx | O | UART Tx of SR+ function |
| 76 | P33/URX1 | SR+Rx | I | UART Rx of SR+ function |
| 77 | P34/UTX2 | BEATCUT1 | O | BEATCUT Control 1 |
| 78 | P35/URX2 | DIGSEL | O | SW for Digital 1/2 select |
| 79 | P36 | SWPOW | O | SW power sw control |
| 80 | PB7 | TXCLK | O | Clock for tuner LSI |
| 81 | PB6 | TXODATA | O | Data for tuner LSI |

| No. | Pin Name | Signal Name | I/O | Function |
|---|---|---|---|---|
| 82 | PB5 | WSEL | O | WIRE LESS OUTPUTSELECT |
| 83 | PB4 | TXCE | O | Chip enable for tuner LSI |
| 84 | PB3 | RDSPOW | O | Control power supply of RDS (L: POWER ON) |
| 85 | PB2 | XSWPOWDET | I | SW POWER DETECT (L: SW POWER DETECT) |
| 86 | PB1 | RDSDATA | I(O) | Input RDS data (without RDS : Low output) |
| 87 | PB0 | TXIDATA | I | Input data from tuner LSI |
| 88 | VSS3 | VSS3 | – | Ground |
| 89 | VDD3 | VDD3 | – | Power supply |
| 90 | PC7 | XMUTEC | O | Cch MUTE ON/OFF |
| 91 | PC6 | INPUTSELB | O | AUDIO INPUT SELECT B |
| 92 | PC5 | INPUTSELA | O | AUDIO INPUT SELECT A |
| 93 | PC4 | DIMMER | O | Control for DIMMER |
| 94 | PC3 | XSYSMUTE | O | Control mute of system |
| 95 | PC2 | (VOLMUTE) | O | (Mute for E-vol IC) (STANDBY) |
| 96 | PC1 | VOLCLK | O | Clock for E-vol IC/HP-vol IC/Wireless-vol IC |
| 97 | PC0 | VOLDATA | O | Data for E-vol IC/HP-vol IC/Wireless-vol IC |
| 98 | PA0 | FLASHE/D | – | for FLASH writing |
| 99 | PA1 | FLASHDO | – | for FLASH writing |
| 100 | PA2 | FLASHCLK | – | for FLASH writing |

## TDA9818TS (TV MODULE ASSY : IC302)

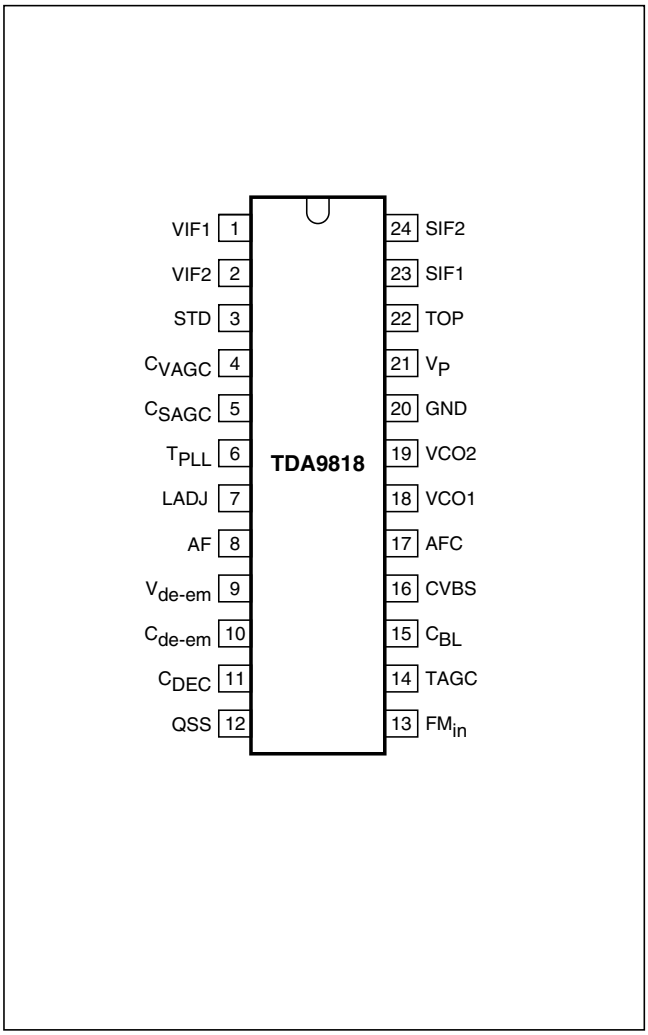
• VIF/SIF IC



## ● PIN FUNCTION

| SYMBOL | PIN | DESCRIPTION |
|---|---|---|
| VIF1 | 1 | VIF differential input signal voltage 1 |
| VIF2 | 2 | VIF differential input signal voltage 2 |
| STD | 3 | standards selection switch; note 1 |
| $C_{VAGC}$ | 4 | VIF AGC capacitor |
| $C_{SAGC}$ | 5 | SIF AGC capacitor |
| $T_{PLL}$ | 6 | PLL filter |
| LADJ | 7 | L/L accent switch and adjust |
| AF | 8 | audio output |
| $V_{de\text{-}em}$ | 9 | de-emphasis output |
| $C_{de\text{-}em}$ | 10 | de-emphasis input |
| $C_{DEC}$ | 11 | decoupling capacitor |
| QSS | 12 | single reference QSS/intercarrier output voltage |
| $FM_{in}$ | 13 | sound intercarrier input voltage |
| TAGC | 14 | tuner AGC output |
| $C_{BL}$ | 15 | black level detector |
| CVBS | 16 | composite video output voltage |
| AFC | 17 | AFC output |
| VCO1 | 18 | VCO1 resonance circuit |
| VCO2 | 19 | VCO2 resonance circuit |
| GND | 20 | ground |
| $V_P$ | 21 | supply voltage |
| TOP | 22 | tuner AGC takeover point adjust |
| SIF1 | 23 | SIF differential input signal voltage 1 |
| SIF2 | 24 | SIF differential input signal voltage 2 |

## ● PIN LAYOUT



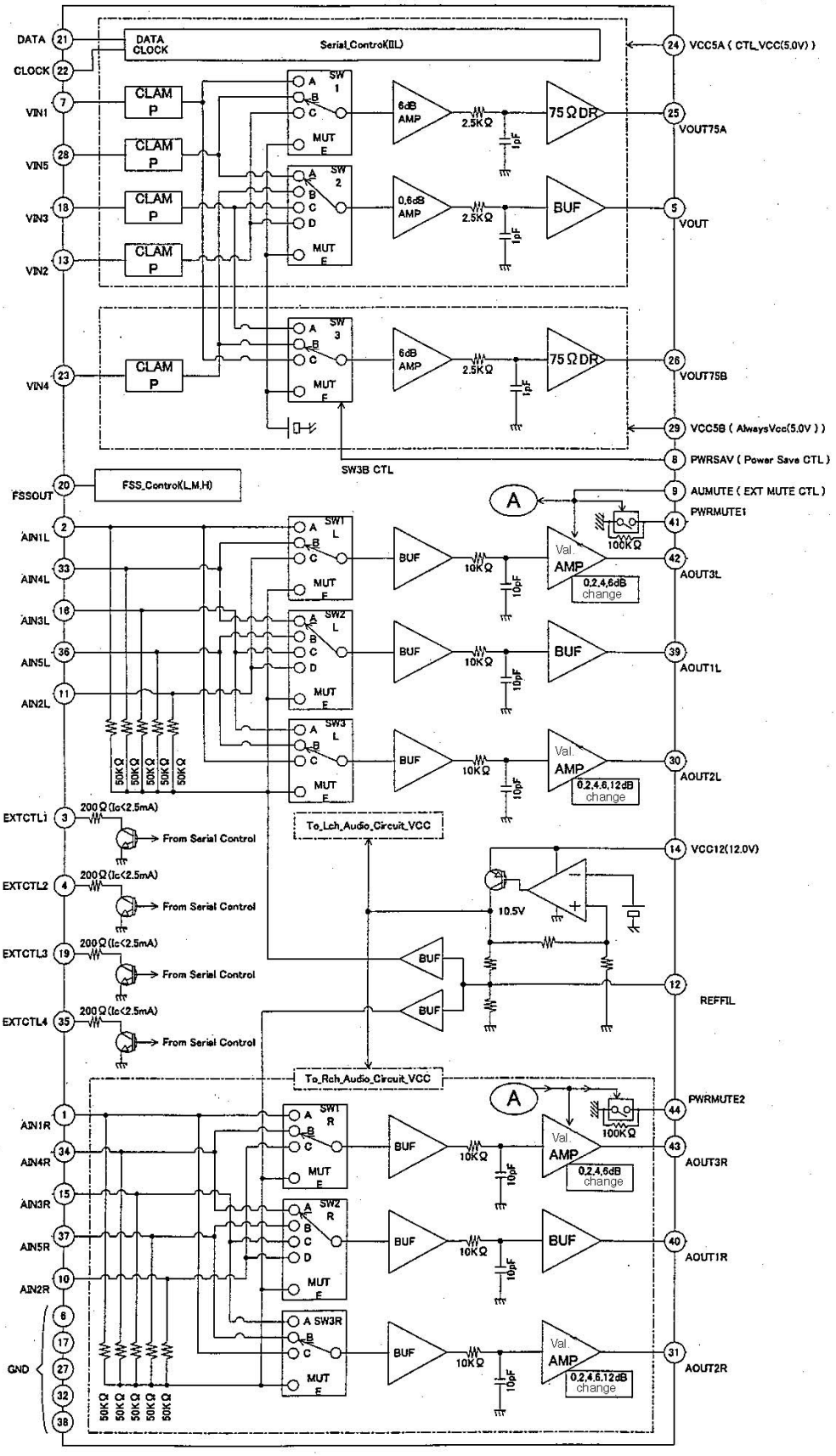
## ■ LA73026AV (JACK ASSY : IC501)

• Dual SCART Interface IC

### ● Pin Function

| No. | Pin Name | DC Voltage | Function |
|---|---|---|---|
| 1<br>2<br>10<br>11<br>15<br>16<br>33<br>34<br>36<br>37 | AIN1R<br>AIN1L<br>AIN2R<br>AIN2L<br>AIN3R<br>AIN3L<br>AIN4L<br>AIN4R<br>AIN5L<br>AIN5R | 5.58V | Audio input terminal |
| 3<br>4<br>19<br>35 | EXTCTL1<br>EXTCTL2<br>EXTCTL3<br>EXTCTL4 | 2.5mA, ON<br>→0.75V<br><br>OFF<br>→OPEN | General purpose output<br>Opencollector |
| 5 | VOUT | 1.10V | Video output terminal<br>Push-pull output/Low-impedance |
| 6<br>17<br>27<br>32<br>38 | GND<br>GND<br>EXT-75ΩDR-GND<br>DEC-75Ω-GND<br>GND | 0V | |
| 7<br>13<br>18<br>23<br>28 | VIN1<br>VIN2<br>VIN3<br>VIN4<br>VIN5 | 1.8V | Video input terminal<br>Sync-tip clamp<br>Input/Hi-impedance |
| 8 | PWRSAV | 0.2V | Power save mode select pin<br>OPEN : L |
| 9 | AUMUTE | 0.05V | Control terminal for audio mute<br>OPEN : L |
| 12 | REFFIL | 4.94V | Terminal for Ref_DC ripple removing |
| 14 | VCC12 | | Vcc for audio |
| 20 | FSSOUT | H : Vcc-0.5V<br>M : 6V<br>L : 0V | FSS control terminal<br>Output H, M, L<br>3 values with serial control |
| 21 | DATA | | Confirmed to IIC BUS. Data input terminal |
| 22 | CLOCK | | Confirmed to IIC BUS. Clock input terminal |
| 24 | VCC5A | | Control Vcc for Video |
| 25<br>26 | VOUT75A<br>VOUT75B | 1.10V | Video driver output terminal<br>Push-pull output/Low-impedance |
| 29 | VCC5B | | Always VCC for Video |
| 30<br>31<br>42<br>43 | AOUT2L<br>AOUT2R<br>AOUT3L<br>AOUT3R | 4.91V | Audio output terminal<br>Push-pull output/Low-impedance |
| 39<br>40 | AOUT1L<br>AOUT1R | 4.91V | Audio output terminal<br>Push-pull output/Low-impedance |
| 41<br>44 | PWRMUTE1<br>PWRMUTE2 | 0V | Output terminal of audio muting |

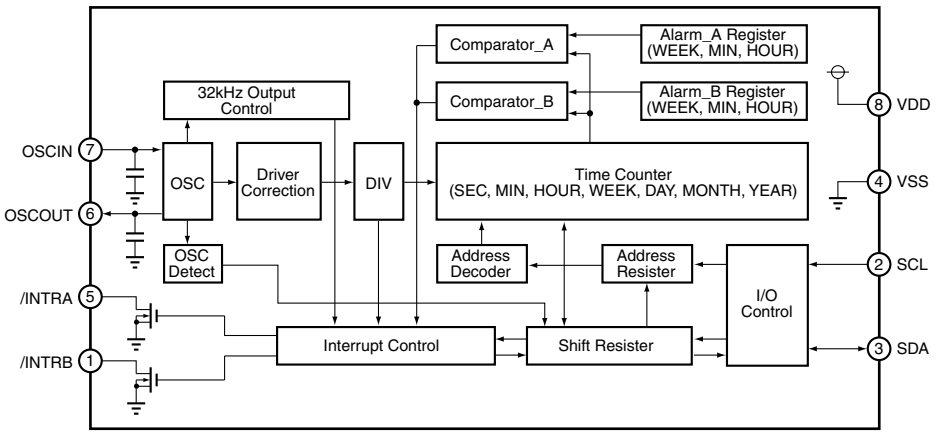
## ● Block Diagram



## ■ RS5C372A (CONTROL ASSY : IC802)

• Real Time Clock IC

### ● Block Diagram



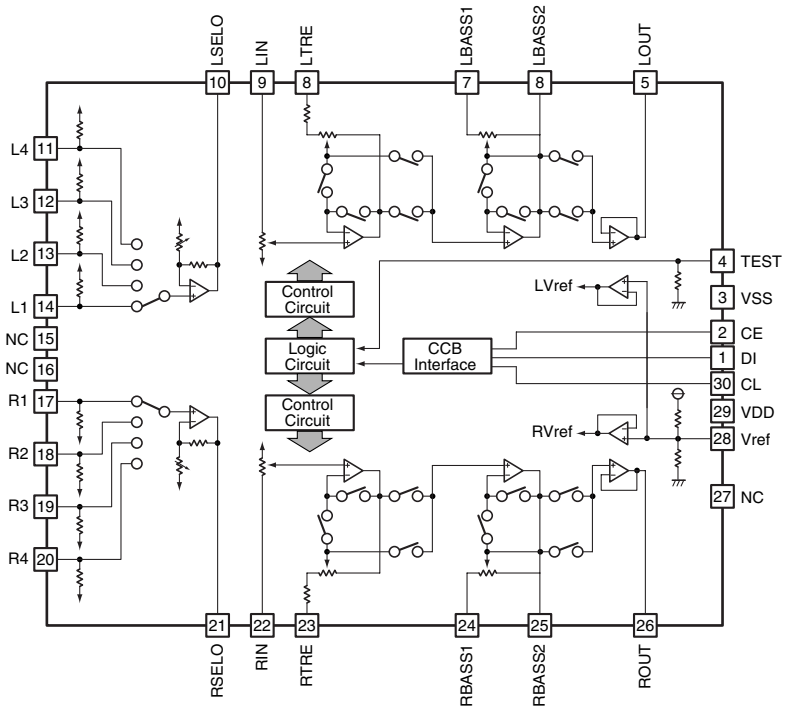

### ● Pin Function

| No. | Pin Name | I/O | Function | |
|---|---|---|---|---|
| 1 | /INTRB | O | Interruption output B<br>The output of 32.768kHz (in 32768Hz crystal use), cycled interrupt for CPU, or output alarm interrupt (ALARM_B). This pin output 32.768kHz when activated power from 0V.<br>Nch open drain output. | |
| 2 | SCL | I | Shift clock input<br>Synchronize with this clock, and input and output data from a SDA terminal.<br>Exceed VDD, and can input to 6V. | |
| 3 | SDA | I/O | Serial input and output<br>Synchronize with SCL, and input and output writing data or readout data.<br>Exceed VDD, and can input to 6V. Nch open drain output in the output. | |
| 4 | VSS | – | Ground pin | |
| 5 | /INTRA | O | Interruption output A<br>Cycled interrupt for CPU, or output alarm interruption (ALARM_A, ALARM_B).<br>This pin becomes an OFF state when activated power from 0V. N ch open drain output. | |
| 6 | OSCOUT | O | Oscillation circuit output | Connect a crystal resonator of 32.768kHz or 32.000kHz between OSCIN and OSCOUT, and constitute oscillation circuit.<br>(component parts of oscillation circuit except crystal resonator have it built-in.) |
| 7 | OSCIN | I | Oscillation circuit input | |
| 8 | VDD | – | Positive supply input | |

## LC75342M (JACK ASSY : IC601)

• Electric Volume IC

### ● Block Diagram



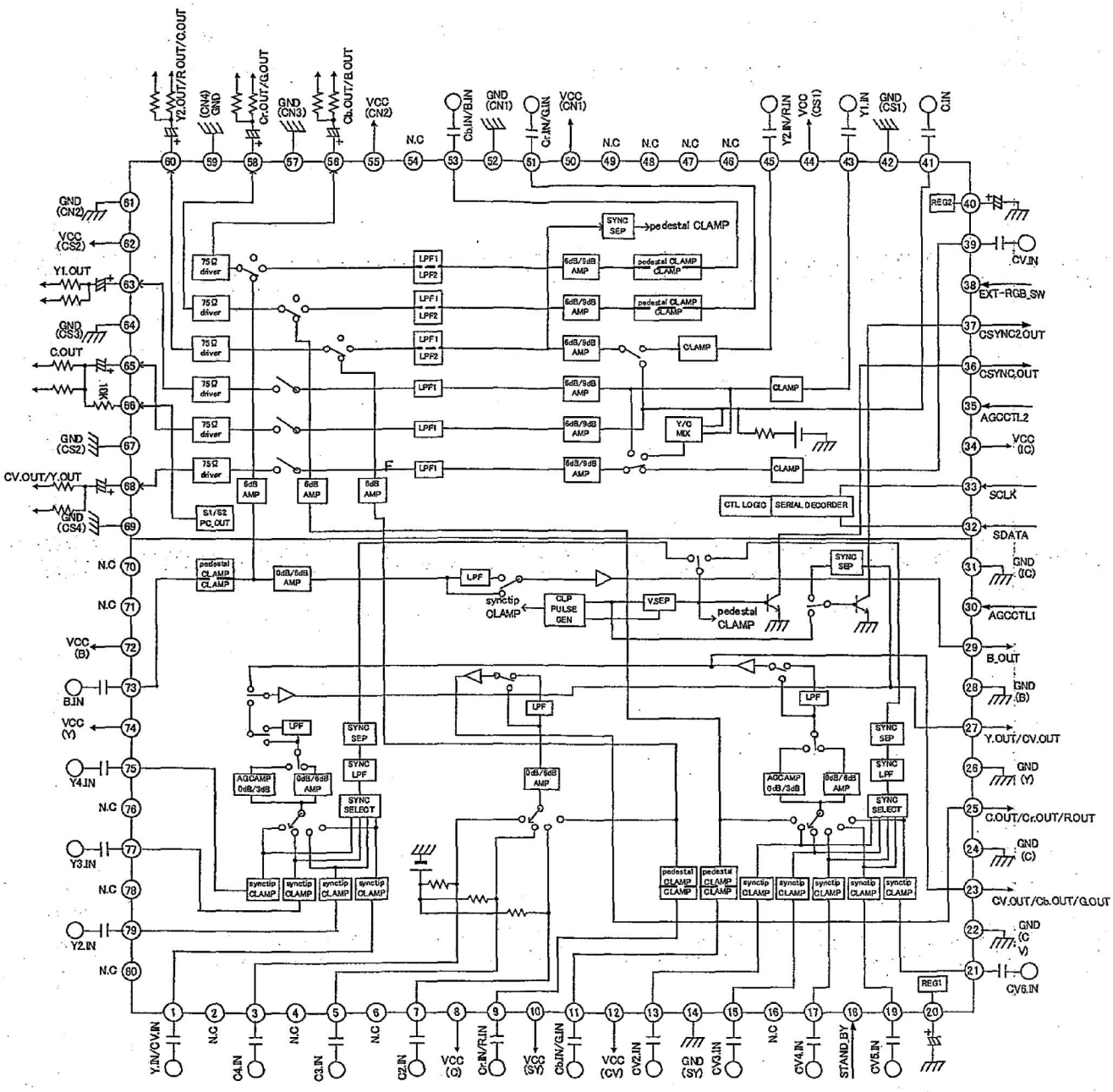

### ● Pin Function

| No. | Pin Name | Function | No. | Pin Name | Function |
|---|---|---|---|---|---|
| 1 | DI | Serial data input for control | 16 | NC | Not connected |
| 2 | CE | Chip enable pin<br>Data are written in the internal latch by a timing of "H" → "L", and each analog switch works.<br>Data transfer is enabled by "H" level. | 17 | R1 | Input signal pin |
| 3 | VSS | Ground pin | 18 | R2 | |
| 4 | TEST | Pin for electronic volume test<br>Set to VSS electric potential. | 19 | R3 | |
| 5 | LOUT | Volume and equalizer output pin | 20 | R4 | |
| 6 | LBASS2 | Capacitor and resistor connection pins for bus bandpass filter | 21 | RSELO | Input selector output pin |
| 7 | LBASS1 | | 22 | RIN | Volume and equalizer input pin |
| 8 | LTRE | Capacitor connection pin for treble bandpass filter | 23 | RTRE | Capacitor connection pin for treble bandpass filter |
| 9 | LIN | Volume and equalizer input pin | 24 | RBASS1 | Capacitor and resistor connection pins for bus bandpass filter |
| 10 | LSELO | Input selector output pin | 25 | RBASS2 | |
| 11 | L4 | Input signal pins | 26 | ROUT | Volume and equalizer output pin |
| 12 | L3 | | 27 | NC | Not connected |
| 13 | L2 | | 28 | Vref | 0.5XVDD voltage generation block |
| 14 | L1 | | 29 | VDD | Power supply pin |
| 15 | NC | Not connected | 30 | CL | Clock input pin for control |

## ■ LA73033M (JACK ASSY : IC701)

• Video selector and Video driver

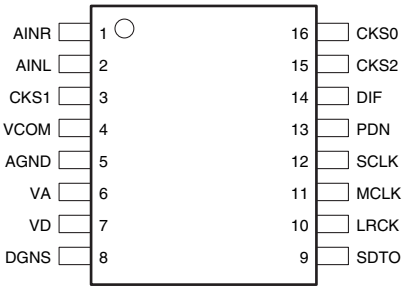
### ● Block Diagram



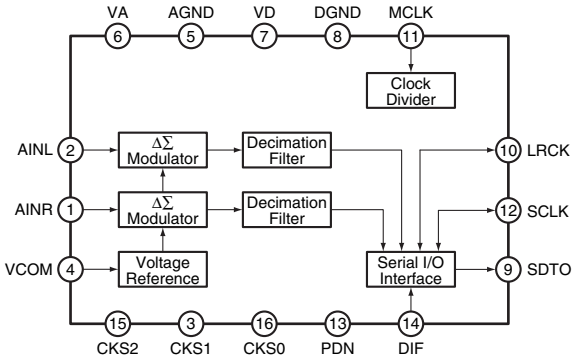
## ■ AK5357VT (MAIN ASSY : IC3101)

• 96kHz 24 bit ΔΣ ADC

### ● Pin Arrangement (Top view)




### ● Block Diagram



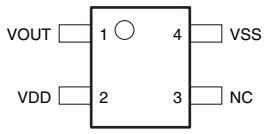

### ● Pin Function

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | AINR | I | R ch analog input |
| 2 | AINL | I | L ch analog input |
| 3 | CKS1 | I | Mode select 1 |
| 4 | VCOM | O | Common voltage output, bias voltage of VA/2 and ADC input |
| 5 | AGND | – | Analog ground |
| 6 | VA | – | Analog power supply, 2.7 to 5.5V |
| 7 | VD | – | Digital power supply, 2.7 to 5.5V |
| 8 | DGND | – | Digital ground |
| 9 | SDTO | O | Audio serial data output, outputs "L" in the power down mode. |
| 10 | LRCK | I/O | Channel clock I/O, outputs "L" by master mode in the power down mode. |
| 11 | MCLK | I | Master clock input |
| 12 | SCLK | I/O | Audio serial data clock, outputs "L" by master mode in the power down mode. |
| 13 | PDN | I | Power down mode "H": power up, "L": power down |
| 14 | DIF | I | Audio interface format, "H" : 24 bit I2S compatibility, "L" : 24 bit MSB justify |
| 15 | CKS2 | I | Mode select 2 |
| 16 | CKS0 | I | Mode select 0 |

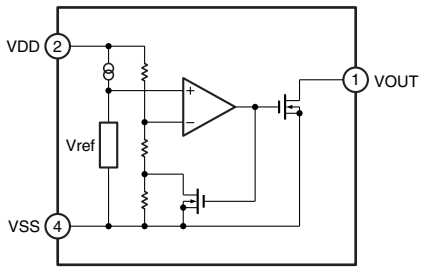
## PST3428U (MAIN ASSY : IC4003)

• Reset IC

### ● Pin Arrangement (Top view)




### ● Block Diagram



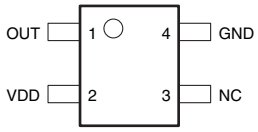

### ● Pin Function

| No. | Pin Name | Function |
|---|---|---|
| 1 | VOUT | Reset signal output |
| 2 | VDD | Power supply / voltage detection |
| 3 | NC | Not connected |
| 4 | VSS | VSS |

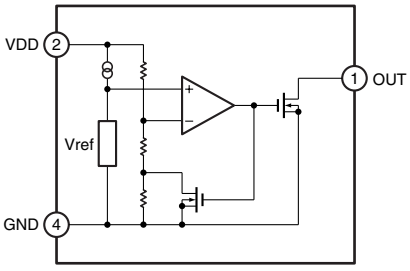
## PST3809U (MAIN ASSY : IC4005)

• Reset IC

### ● Pin Arrangement (Top view)




### ● Block Diagram



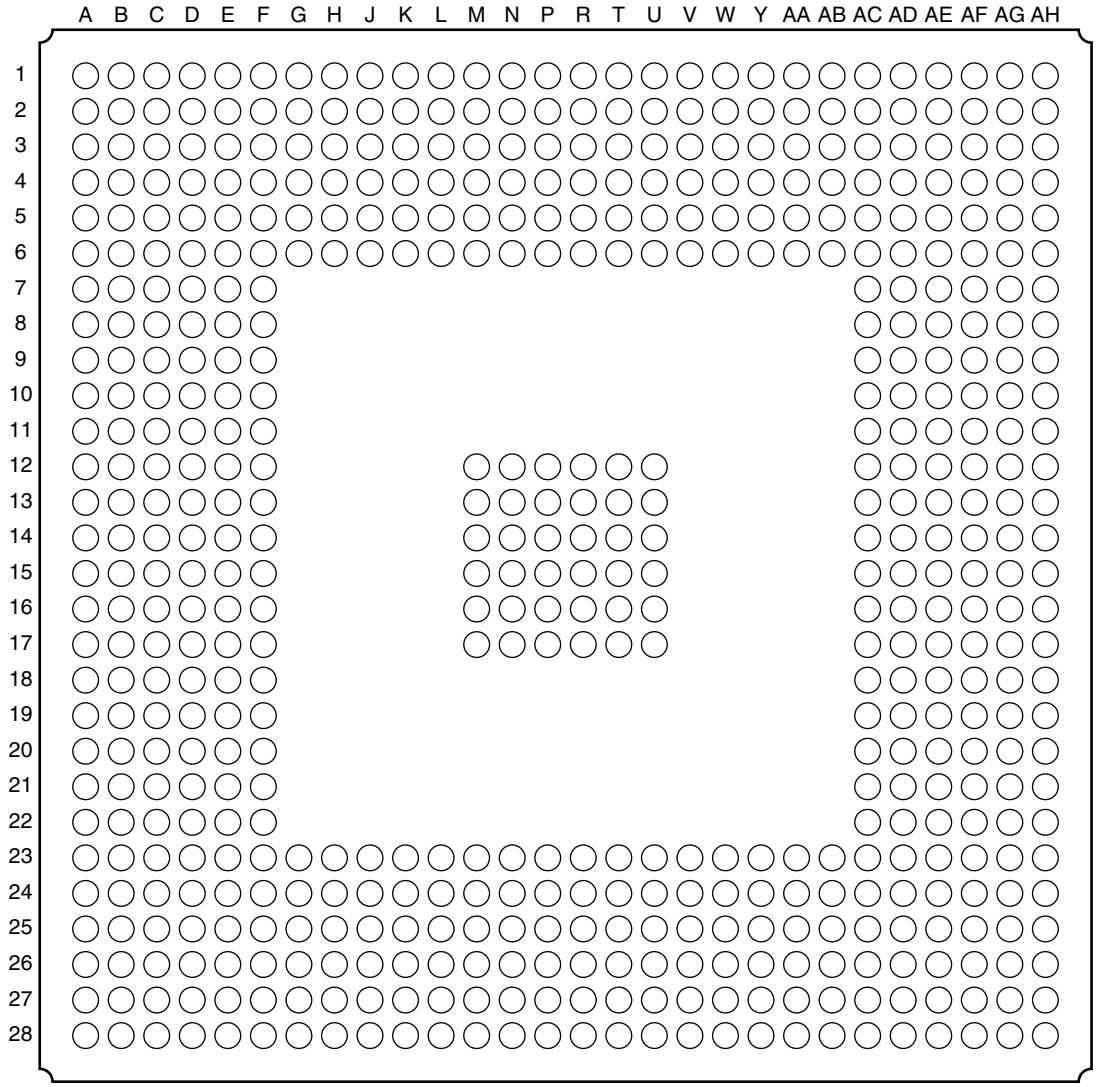

### ● Pin Function

| No. | Pin Name | Function |
|---|---|---|
| 1 | OUT | Reset signal output |
| 2 | VDD | Power supply / voltage detection |
| 3 | NC | Not connected |
| 4 | GND | Ground |

## M65673WG-A (MAIN ASSY : IC1001)

• Signal Processing IC for DVD Recorder

### ● Pin Arrangement (Top view)




### ● I/O buffer list

| Buffer Name | Main Function | Remarks |
|---|---|---|
| PDIDGZ | Input buffer (5V tolerant) | |
| PDUDGZ | Input buffer (5V tolerant), pull-up | |
| PDDDGZ | Input buffer (5V tolerant), pull-down | |
| PDO04CDG | Output buffer, 4mA | |
| PDO08CDG | Output buffer, 8mA | |
| PDO0204DGZ | Output buffer, 2/4mA | |
| PDO0406DSGZ | Output buffer, 4/6mA | For SDRAM IF |
| PDO0406DSGZ×2 | Output buffer, 8/12mA | For SDRAM IF |
| PDT0204DGZ | 3 state output buffer, 2/4mA | |
| PDB04DGZ | Bidirectional buffer, 4mA | |
| PDB08DGZ | Bidirectional buffer, 8mA | |
| PDB0204DGZ | Bidirectional buffer, 2/4mA | |
| PDB0406DSGZ | Bidirectional buffer, 4/6mA | For SDRAM IF |

## ● Pin Name list

| | A | B | C | D | E | F | G | H | J | K | L | M | N | P | R | T | U | V | W | Y | AA | AB | AC | AD | AE | AF | AG | AH | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | VDD | EDATA[23] | EDATA[22] | EDATA[20] | EDATA[18] | EDATA[16] | EADRS[0] | EBS[0] | ERAS | EDQM | EDATA[6] | EDATA[3] | EDATA[0] | AVDDAD8 | BG8 | VRB8 | AVDDAD8 | VRM10 | AVDDAD10 | PACKETEN | WM2DTO[2] | VDD | WMCLKO | WM1DTO[4] | WM1DTI[1] | WM1DTI[3] | HKEYPLS | VDD | 28 |
| 27 | AT1DATA[12] | EDATA[24] | EDATA[25] | EDATA[21] | EDATA[19] | EDATA[17] | EADRS[1] | EBS[1] | ECS | EWE | EDATA[7] | EDATA[4] | EDATA[1] | AVSSAD8 | GIN | VRT8 | DVSSAD10 | CVBSIN | VBGR10 | STREAM | WM2DTO[4] | WM2DTO[6] | WM1DTO[1] | WM1DTO[6] | WM1DTI[4] | PEDCTL | REC656O[1] | REC656O[3] | 27 |
| 26 | AT1DATA[8] | AT1DATA[13] | AT1DATA[15] | EDATA[26] | EDATA[29] | EDATA[30] | EADRS[2] | EADRS[10] | EADRS[11] | ECAS | EDATA[8] | EDATA[5] | EDATA[2] | DVSSAD8 | CRIN | CIN | VRBD10 | VRT10 | NBC10 | SYNC | WM2DTO[3] | WM1DTO[0] | WM1DTO[5] | WM1DTI[2] | WM1DTI[7] | ACCCTL | REC656O[2] | AVDD2DA10 | 26 |
| 25 | AT1DATA[7] | AT1DATA[6] | AT1DATA[14] | EDATA[27] | EDATA28 | EDATA[31] | EADRS[4] | EADRS[6] | EADRS[8] | ECLKEN | EDATA[9] | EDATA[11] | EDATA[13] | DVDDAD8 | AVDDAD8 | AVSSAD8 | VRB10 | AVSSAD10 | TSRW | WM2DTO[0] | WM2DTO[7] | WM1DTO[2] | WM1DT[0] | WM1DTI[6] | AGCCTL | REC656O[5] | YOUT | AVSS2DA10 | 25 |
| 24 | AT1DATA[2] | AT1DATA[1] | AT1DATA[5] | AT1DATA[10] | AT1DATA[14] | EDATA[3] | EADRS[5] | EADRS[7] | EADRS[9] | ECLKO | EDATA[10] | EDATA[12] | EDATA[14] | EDATA[15] | AVSSAD8 | DVDDAD10 | VRTD10 | TSCLK | WM2DTO[1] | WM2DTO[4] | WM1DTO[3] | WM2DTC[1] | WM1DT[5] | REC656O[0] | COUT | IREF[1] | ROUT | AVDD1DA10 | 24 |
| 23 | AT1DIOW | AT1DMACK | AT1DATA[0] | AT1DATA[3] | AT1DATA[9] | GND | VDD3 | VDD | GND | VDD3 | VDD | GND | VDD3 | VDD | GND | VDD2 | VDD | GND | VDD2 | VDD | GND | VDD3 | VDD | REC656O[4] | AVDD1DA10 | BOUT | DVACK | DVREQ | 23 |
| 22 | AT1ADR[1] | AT1INTRQ | AT1DIOR | AT1RESET | AT1DATA[4] | VDD3 | | | | | | | | | | | | | | | | | VDD3 | IREF[0] | AVSS1DA10 | REC656O[6] | DVVIDEO[0] | DVVIDEO[1] | 22 |
| 21 | AT1CS[0] | AT1CS[1] | AT1ADR[0] | AT1IORDY | AT1DMARQ | VDD | | | | | | | | | | | | | | | | | VDD | GOUT | REC656O[7] | DVVIDEO[3] | DVVIDEO[4] | PLL2AVSS | 21 |
| 20 | AT2DATA[11] | AT2DATA[12] | AT1DATA[13] | AT2DATA[14] | AT1ADR[2] | GND | | | | | | | | | | | | | | | | | GND | DVVIDEO[2] | ADMCLKI | PLL2AVDD | DVVCLKI | DVVIDEO[7] | 20 |
| 19 | AT2DATA[6] | AT2DATA[7] | AT2DATA[8] | AT2DATA[10] | AT2DATA[15] | VDD3 | | | | | | | | | | | | | | | | | VDD3 | R656CLKI | DVVIDEO[5] | REC656[0] | REC656[1] | REC656[2] | 19 |
| 18 | AT2DATA[1] | AT2DATA[2] | AT2DATA[4] | AT2DATA[5] | AT2DATA[9] | VDD | | | | | | | | | | | | | | | | | VDD | DVVIDEO[6] | REC656[3] | REC656[4] | REC656[6] | REC656[7] | 18 |
| 17 | AT2DIOW | AT2DMARQ | AT2RESET | AT2DATA[0] | AT2DATA[3] | GND | | | | | | GND | GND | GND | GND | GND | GND | | | | | | GND | REC656[5] | PXCLK | DVVCLKO | PLLRST | TRST | 17 |
| 16 | AT2ADR[2] | AT2INTRQ | AT2IORDY | AT2DIOR | AT2DMACK | VDD3 | | | | | | GND | GND | GND | GND | GND | GND | | | | | | VDD3 | TCK | TDI | TDO | TMS | PLLON | 16 |
| 15 | AT2MODE | AT2CS[0] | AT2CS[1] | AT2ADR[0] | AT2ADR[1] | VDD | | | | | | GND | GND | GND | GND | GND | GND | | | | | | VDD | VIPWM | CSYNC | TESTMOD[0] | TESTMOD[1] | TESTMOD[2] | 15 |
| 14 | RESET | VDD | DBI | TRACE | VDD | GND | | | | | | GND | GND | GND | GND | GND | GND | | | | | | VDD | TESTMOD[6] | VDD | TESTMOD[5] | TESTMOD[4] | TESTMOD[3] | 14 |
| 13 | PCO | PLL3AVSS | PLL3AVDD | VMCLK | PLL1AVDD | VDD3 | | | | | | GND | GND | GND | GND | GND | GND | | | | | | VDD3 | HADRS[28] | HADRS[29] | HADRS[24] | HADRS[25] | HADRS[26] | 13 |
| 12 | PLL1AVSS | ADCCLKO | VDD | DVAMCLKO | DVAMCLKI | VDD | | | | | | GND | GND | GND | GND | GND | GND | | | | | | GND | HADRS[27] | HADRS[19] | HADRS[18] | HADRS[23] | HADRS[22] | 12 |
| 11 | DACCLKO | AMCLK1 | AMCLK2 | ARDATA[1] | ARDATA[0] | GND | | | | | | | | | | | | | | | | | VDD | HADRS[15] | HADRS[16] | HADRS[17] | HADRS[20] | HADRS[21] | 11 |
| 10 | ARDATA[14] | ARDATA[15] | ARDATA[4] | ARDATA[3] | ARDATA[2] | VDD2 | | | | | | | | | | | | | | | | | VDD3 | HDCS[1] | HDCS[0] | HCAS | HRAS | HCLKEN | 10 |
| 9 | ARDATA[11] | ARDATA[12] | ARDATA[13] | ARDATA[6] | ARDATA[5] | VDD | | | | | | | | | | | | | | | | | GND | HDATA[7] | HDWE | DQMWS[0] | DQMWS[1] | HCLKO | 9 |
| 8 | ARDATA[10] | ARDATA[9] | ARWE | ARDQM[0] | ARDATA[7] | GND | | | | | | | | | | | | | | | | | VDD | HDATA[6] | HDATA[5] | HDATA[4] | HDATA[8] | HDATA[9] | 8 |
| 7 | ARDATA[8] | ARDQM[1] | ARCS[0] | ARRAS | ARCAS | VDD3 | | | | | | | | | | | | | | | | | VDD3 | HADRS[9] | HDATA[2] | HDATA[3] | HDATA11] | HDATA[10] | 7 |
| 6 | ARCLKO | ARADRS[12] | ARADRS[13] | ARADRS[14] | ARCS[1] | VDD | VDD3 | GND | VDD | VDD3 | VDD | GND | VDD3 | VDD | GND | VDD3 | VDD | GND | VDD3 | VDD | GND | VDD3 | VDD | HADRS[10] | HDATA[1] | HDATA[0] | HDATA[12] | HDATA[13] | 6 |
| 5 | ARADRS[11] | ARADRS[9] | ARADRS[1] | ARADRS[0] | ARADRS[10] | SPDIFI | ACMOD[0] | BCKO | DVDADT[4] | DVDAADR[0] | SCIDATA[0] | SPIDATAO | DDATA[11] | DDATA[8] | DCLKO | DADRS[9] | DADRS[8] | INT[7] | INT[1] | CTS[2] | RTS[0] | TX[3] | HWAIT | HCS[5] | HADRS[11] | HADRS[12] | HDATA[15] | HDATA[14] | 5 |
| 4 | ARADRS[8] | ARADRS[3] | ARADRS[2] | SRCBCKI | SRCDATAO | ACMOD[1] | LRCKO | DVDADT[3] | DVDAREQ | SCIDATA[1] | SPICS | DDATA[14] | DDATA[12] | DDATA[9] | DDQM[1] | DADRS[11] | DADRS[7] | DADRS[6] | INT[6] | INT[2] | CTS[1] | RX[3] | TX[2] | HDACK[0] | VDD | HCS[0] | HADRS[13] | HADRS[14] | 4 |
| 3 | ARADRS[7] | ARADRS[6] | SRCLRCKI | SRCLRCKO | DVBCK | ADATAI | DVDADT[5] | DVDADT[1] | DVDAACK | VDD | SPIDATAI | DDATA[15] | DDATA[13] | DDATA[10] | DWE | DCS | DADRS[10] | DADRS[5] | DADRS[4] | INT[3] | SCLK[0] | CTS[0] | RX[2] | TX[1] | HDREQ[0] | HCS[3] | HCS[2] | HADRS[30] | 3 |
| 2 | ARADRS[5] | ARADRS[4] | SRCBCKO | SPDIFO | BCKI | DVDADT[7] | DVDADT[6] | DVDADT[0] | SCICS[1] | SCICLK[1] | SPICLK | DDATA[2] | DDATA[3] | DDATA[6] | DDQM[0] | DRAS | DBS[1] | DADRS[1] | DADRS[2] | INT[4] | SCLK[1] | RTS[3] | RTS[2] | RX[1] | HDACK[1] | HOE | HCS[4] | HCS[1] | | 2 |
| 1 | VDD | SRCDATAI | DVLRCK | DVADATA | LRCKI | ADATAO | DVDADT[2] | DVDAADR[1] | SCICS[0] | SCICLK[0] | DDATA[0] | DDATA[1] | DDATA[4] | DDATA[5] | DDATA[7] | DCAS | DBS[0] | DADRS[0] | DADRS[3] | INT[5] | INT[0] | CTS[3] | RTS[1] | RX[0] | TX[0] | HDREQ[1] | NC | NC | | 1 |
| | A | B | C | D | E | F | G | H | J | K | L | M | N | P | R | T | U | V | W | Y | AA | AB | AC | AD | AE | AF | AG | AH | |

| | |
|---|---|
| VDD | : 1.2V Power supply |
| VDD3 | : 3.3V Power supply |
| GND | : Ground |

## ● Pin Function

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 1 | VDD3 | VDD3 | – | 3.3V I/O power supply | 56 | V26 | VRT10 | – | TOP side reference voltage |
| 2 | GND | GND | – | Ground | 57 | V28 | VRM10 | – | Common voltage |
| 3 | VDD | VDD | – | 1.2V LOGIC power supply | 58 | U25 | VRB10 | – | Bottom side reference voltage |
| 4 | AH28 | VDD | – | 1.2V LOGIC power supply | 59 | U26 | VRBD10 | I/O | Analog test bus (for debugging) |
| 5 | AF26 | ACCCTL | O | | 60 | U27 | DVSSAD10 | – | ADC part digital ground |
| 6 | AF27 | PEDCTL | O | VIDEO-Analog, Output buffer | 61 | T24 | DVDDAD10 | – | ADC part digital power supply (3.3V) |
| 7 | AG28 | HKEYPLS | O | VIDEO-Analog, Output buffer | 62 | GND | GND | – | Ground |
| 8 | GND | GND | – | Ground | 63 | VDD | VDD | – | 1.2V LOGIC power supply |
| 9 | AE26 | WM1DTI[7] | I/O | WM/VWM, Bidirectional buffer | 64 | U28 | AVDDAD8 | – | |
| 10 | AD25 | WM1DTI[6] | I/O | WM/VWM, Bidirectional buffer | 65 | T25 | AVSSAD8 | – | |
| 11 | AC24 | WM1DTI[5] | I/O | WM/VWM, Bidirectional buffer | 66 | T26 | CIN | I | VIDEO-Analog |
| 12 | AE27 | WM1DTI[4] | I/O | WM/VWM, Bidirectional buffer | 67 | T27 | VRT8 | – | VIDEO-Analog |
| 13 | AF28 | WM1DTI[3] | I/O | WM/VWM, Bidirectional buffer | 68 | T28 | VRB8 | – | VIDEO-Analog |
| 14 | AD26 | WM1DTI[2] | I/O | WM/VWM, Bidirectional buffer | 69 | R25 | AVDDAD8 | – | |
| 15 | AE28 | WM1DTI[1] | I/O | WM/VWM, Bidirectional buffer | 70 | R24 | AVSSAD8 | – | |
| 16 | AC25 | WM1DTI[0] | I/O | WM/VWM, Bidirectional buffer | 71 | R26 | CRIN | I | VIDEO-Analog |
| 17 | AB24 | WM1DTO[7] | I/O | WM/VWM, Bidirectional buffer | 72 | R28 | BG8 | – | VIDEO-Analog |
| 18 | VDD | VDD | – | 1.2V LOGIC power supply | 73 | P28 | AVDDAD8 | – | |
| 19 | GND | GND | – | Ground | 74 | P27 | AVSSAD8 | – | |
| 20 | AD27 | WM1DTO[6] | I/O | WM/VWM, Bidirectional buffer | 75 | R27 | GIN | I | VIDEO-Analog |
| 21 | AC26 | WM1DTO[5] | I/O | WM/VWM, Bidirectional buffer | 76 | P26 | DVSSAD8 | – | |
| 22 | AD28 | WM1DTO[4] | I/O | WM/VWM, Bidirectional buffer | 77 | P25 | DVDDAD8 | – | |
| 23 | AA24 | WM1DTO[3] | I/O | WM/VWM, Bidirectional buffer | 78 | GND | GND | – | Ground |
| 24 | AB25 | WM1DTO[2] | I/O | WM/VWM, Bidirectional buffer | 79 | P24 | EDATA[15] | I/O | SDRAM ENC, Bidirectional buffer |
| 25 | VDD | VDD | – | 1.2V LOGIC power supply | 80 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 26 | AC27 | WM1DTO[1] | I/O | WM/VWM, Bidirectional buffer | 81 | N28 | EDATA[0] | I/O | SDRAM ENC, Bidirectional buffer |
| 27 | GND | GND | – | Ground | 82 | N27 | EDATA[1] | I/O | SDRAM ENC, Bidirectional buffer |
| 28 | AC28 | WMCLKO | O | WM/VWM, Output buffer | 83 | N26 | EDATA[2] | I/O | SDRAM ENC, Bidirectional buffer |
| 29 | VDD3 | VDD3 | – | 3.3V I/O power supply | 84 | VDD | VDD | – | 1.2V LOGIC power supply |
| 30 | AB26 | WM1DTO[0] | I/O | WM/VWM, Bidirectional buffer | 85 | N25 | EDATA[13] | I/O | SDRAM ENC, Bidirectional buffer |
| 31 | AA25 | WM2DTO[7] | O | WM/VWM, Output buffer | 86 | GND | GND | – | Ground |
| 32 | AB27 | WM2DTO[6] | O | WM/VWM, Output buffer | 87 | M28 | EDATA[3] | I/O | SDRAM ENC, Bidirectional buffer |
| 33 | AB28 | VDD | – | 1.2V LOGIC power supply | 88 | GND | GND | – | Ground |
| 34 | Y24 | WM2DTO[5] | O | WM/VWM, Output buffer | 89 | N24 | EDATA[14] | I/O | SDRAM ENC, Bidirectional buffer |
| 35 | AA27 | WM2DTO[4] | O | WM/VWM, Output buffer | 90 | M27 | EDATA[4] | I/O | SDRAM ENC, Bidirectional buffer |
| 36 | AA26 | WM2DTO[3] | O | WM/VWM, Output buffer | 91 | M26 | EDATA[5] | I/O | SDRAM ENC, Bidirectional buffer |
| 37 | AA28 | WM2DTO[2] | O | WM/VWM, Output buffer | 92 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 38 | W24 | WM2DTO[1] | O | WM/VWM, Output buffer | 93 | M25 | EDATA[11] | I/O | SDRAM ENC, Bidirectional buffer |
| 39 | GND | GND | – | Ground | 94 | L28 | EDATA[6] | I/O | SDRAM ENC, Bidirectional buffer |
| 40 | Y25 | WM2DTO[0] | O | WM/VWM, Output buffer | 95 | L27 | EDATA[7] | I/O | SDRAM ENC, Bidirectional buffer |
| 41 | GND | GND | – | Ground | 96 | VDD | VDD | – | 1.2V LOGIC power supply |
| 42 | Y26 | SYNC | I/O | TS OUT, Bidirectional buffer | 97 | M24 | EDATA[12] | I/O | SDRAM ENC, Bidirectional buffer |
| 43 | Y27 | STREAM | I/O | TS OUT,Bidirectional buffer | 98 | GND | GND | – | Ground |
| 44 | Y28 | PACKETEN | I/O | TS OUT,Bidirectional buffer | 99 | L26 | EDATA[8] | I/O | SDRAM ENC, Bidirectional buffer |
| 45 | VDD3 | VDD3 | – | 3.3V IO power supply | 100 | GND | GND | – | Ground |
| 46 | W25 | TSRW | O | TS OUT,Output buffer | 101 | L25 | EDATA[9] | I/O | SDRAM ENC, Bidirectional buffer |
| 47 | GND | GND | – | Ground | 102 | K28 | EDQM | O | SDRAM ENC, Output buffer |
| 48 | V24 | TSCLK | O | TS OUT,Output buffer | 103 | K27 | EWE | O | SDRAM ENC, Output buffer |
| 49 | VDD3 | VDD3 | – | 3.3V I/O power supply | 104 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 50 | W26 | NBC10 | – | Bias current adjustment terminal | 105 | K26 | ECAS | O | SDRAM ENC, Output buffer |
| 51 | W27 | VBGR10 | I/O | Analog test bus (for debugging) | 106 | L24 | EDATA[10] | I/O | SDRAM ENC, Bidirectional buffer |
| 52 | W28 | AVDDAD10 | – | ADC part analog power supply (3.3V) | 107 | K25 | ECLKEN | O | Output buffer, 4/6mA |
| 53 | V25 | AVSSAD10 | – | ADC part analog Ground | 108 | VDD | VDD | – | 1.2V LOGIC power supply |
| 54 | V27 | CVBSIN | I | Analog Input | 109 | J28 | ERAS | O | SDRAM ENC, Output buffer |
| 55 | U24 | VRTD10 | – | Input common bias | 110 | GND | GND | – | Ground |

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 111 | J27 | ECS | O | SDRAM ENC, Output buffer | 166 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 112 | GND | GND | – | Ground | 167 | C25 | AT1DATA[11] | I/O | ATAPI-DVD, Bidirectional buffer |
| 113 | J26 | EADRS[11] | O | SDRAM ENC, Output buffer | 168 | D24 | AT1DATA[10] | I/O | ATAPI-DVD, Bidirectional buffer |
| 114 | J25 | EADRS[8] | O | SDRAM ENC, Output buffer | 169 | E23 | AT1DATA[9] | I/O | ATAPI-DVD, Bidirectional buffer |
| 115 | GND | GND | – | Ground | 170 | GND | GND | – | Ground |
| 116 | K24 | ECLKO | O | SDRAM ENC, Output buffer | 171 | A26 | AT1DATA[8] | I/O | ATAPI-DVD, Bidirectional buffer |
| 117 | VDD3 | VDD3 | – | 3.3V I/O power supply | 172 | A25 | AT1DATA[7] | I/O | ATAPI-DVD, Bidirectional buffer |
| 118 | H28 | EBS[0] | O | SDRAM ENC, Output buffer | 173 | B25 | AT1DATA[6] | I/O | ATAPI-DVD, Bidirectional buffer |
| 119 | H27 | EBS[1] | O | SDRAM ENC, Output buffer | 174 | GND | GND | – | Ground |
| 120 | H26 | EADRS[10] | O | SDRAM ENC, Output buffer | 175 | C24 | AT1DATA[5] | I/O | ATAPI-DVD, Bidirectional buffer |
| 121 | VDD | VDD | – | 1.2V LOGIC power supply | 176 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 122 | G28 | EADRS[0] | O | SDRAM ENC, Output buffer | 177 | E22 | AT1DATA[4] | I/O | ATAPI-DVD, Bidirectional buffer |
| 123 | GND | GND | – | Ground | 178 | VDD | VDD | – | 1.2V LOGIC power supply |
| 124 | J24 | EADRS[9] | O | SDRAM ENC, Output buffer | 179 | D23 | AT1DATA[3] | I/O | ATAPI-DVD, Bidirectional buffer |
| 125 | GND | GND | – | Ground | 180 | A24 | AT1DATA[2] | I/O | ATAPI-DVD, Bidirectional buffer |
| 126 | G27 | EADRS[1] | O | SDRAM ENC, Output buffer | 181 | B24 | AT1DATA[1] | I/O | ATAPI-DVD, Bidirectional buffer |
| 127 | H25 | EADRS[6] | O | SDRAM ENC, Output buffer | 182 | GND | GND | – | Ground |
| 128 | G26 | EADRS[2] | O | SDRAM ENC, Output buffer | 183 | C23 | AT1DATA[0] | I/O | ATAPI-DVD, Bidirectional buffer |
| 129 | VDD3 | VDD3 | – | 3.3V I/O power supply | 184 | D22 | AT1RESET | O | Output buffer,8mA |
| 130 | F27 | EDATA[17] | I/O | SDRAM ENC, Bidirectional buffer | 185 | E21 | AT1DMARQ | I | ATAPI-DVD, Input buffer |
| 131 | F28 | EDATA[16] | I/O | SDRAM ENC, Bidirectional buffer | 186 | GND | GND | – | Ground |
| 132 | H24 | EADRS[7] | O | SDRAM ENC, Output buffer | 187 | B23 | AT1DMACK | O | ATAPI-DVD, Output buffer |
| 133 | VDD | VDD | – | 1.2V LOGIC power supply | 188 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 134 | G25 | EADRS[4] | O | SDRAM ENC, Output buffer | 189 | A23 | AT1DIOW | O | ATAPI-DVD, Output buffer |
| 135 | GND | GND | – | Ground | 190 | VDD | VDD | – | 1.2V LOGIC power supply |
| 136 | F26 | EDATA[30] | I/O | SDRAM ENC, Bidirectional buffer | 191 | C22 | AT1DIOR | O | ATAPI-DVD, Output buffer |
| 137 | GND | GND | – | Ground | 192 | D21 | AT1IORDY | I | ATAPI-DVD, Input buffer |
| 138 | E27 | EDATA[19] | I/O | SDRAM ENC, Bidirectional buffer | 193 | B22 | AT1INTRQ | I | ATAPI-DVD, Input buffer |
| 139 | E28 | EDATA[18] | I/O | SDRAM ENC, Bidirectional buffer | 194 | GND | GND | – | Ground |
| 140 | F25 | EDATA[31] | I/O | SDRAM ENC, Bidirectional buffer | 195 | E20 | AT1ADR[2] | O | ATAPI-DVD, Output buffer |
| 141 | VDD3 | VDD3 | – | 3.3V I/O power supply | 196 | A22 | AT1ADR[1] | O | ATAPI-DVD, Output buffer |
| 142 | E26 | EDATA[29] | I/O | SDRAM ENC, Bidirectional buffer | 197 | C21 | AT1ADR[0] | O | ATAPI-DVD, Output buffer |
| 143 | G24 | EADRS[5] | O | SDRAM ENC, Output buffer | 198 | GND | GND | – | Ground |
| 144 | D28 | EDATA[20] | I/O | SDRAM ENC, Bidirectional buffer | 199 | B21 | AT1CS[1] | O | ATAPI-DVD, Output buffer |
| 145 | VDD | VDD | – | 1.2V LOGIC power supply | 200 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 146 | D27 | EDATA[21] | I/O | SDRAM ENC, Bidirectional buffer | 201 | A21 | AT1CS[0] | O | ATAPI-DVD, Output buffer |
| 147 | GND | GND | – | Ground | 202 | VDD | VDD | – | 1.2V LOGIC power supply |
| 148 | C28 | EDATA[22] | I/O | SDRAM ENC, Bidirectional buffer | 203 | E19 | AT2DATA[15] | I/O | ATAPI-HDD, Bidirectional buffer |
| 149 | GND | GND | – | Ground | 204 | D20 | AT2DATA[14] | I/O | ATAPI-HDD, Bidirectional buffer |
| 150 | F24 | EADRS[3] | O | SDRAM ENC, Output buffer | 205 | C20 | AT2DATA[13] | I/O | ATAPI-HDD, Bidirectional buffer |
| 151 | E25 | EDATA[28] | I/O | SDRAM ENC, Bidirectional buffer | 206 | GND | GND | – | Ground |
| 152 | D26 | EDATA[26] | I/O | SDRAM ENC, Bidirectional buffer | 207 | B20 | AT2DATA[12] | I/O | ATAPI-HDD, Bidirectional buffer |
| 153 | VDD3 | VDD3 | – | 3.3V I/O power supply | 208 | A20 | AT2DATA[11] | I/O | ATAPI-HDD, Bidirectional buffer |
| 154 | B28 | EDATA[23] | I/O | SDRAM ENC, Bidirectional buffer | 209 | D19 | AT2DATA[10] | I/O | ATAPI-HDD, Bidirectional buffer |
| 155 | C27 | EDATA[25] | I/O | SDRAM ENC, Bidirectional buffer | 210 | GND | GND | – | Ground |
| 156 | B27 | EDATA24] | I/O | SDRAM ENC, Bidirectional buffer | 211 | E18 | AT2DATA[9] | I/O | ATAPI-HDD, idirectional buffer |
| 157 | VDD | VDD | – | 1.2V LOGIC power supply | 212 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 158 | D25 | EDATA[27] | I/O | SDRAM ENC, Bidirectional buffer | 213 | C19 | AT2DATA[8] | I/O | ATAPI-HDD, Bidirectional buffer |
| 159 | GND | GND | – | Ground | 214 | VDD | VDD | – | 1.2V LOGIC power supply |
| 160 | C26 | AT1DATA[15] | I/O | ATAPI-DVD, Bidirectional buffer | 215 | B19 | AT2DATA[7] | I/O | ATAPI-HDD, Bidirectional buffer |
| 161 | E24 | AT1DATA[14] | I/O | ATAPI-DVD, Bidirectional buffer | 216 | A19 | AT2DATA[6] | I/O | ATAPI-HDD, Bidirectional buffer |
| 162 | GND | GND | – | Ground | 217 | D18 | AT2DATA[5] | I/O | ATAPI-HDD, Bidirectional buffer |
| 163 | A28 | VDD | – | 1.2V LOGIC power supply | 218 | GND | GND | – | Ground |
| 164 | B26 | AT1DATA[13] | I/O | ATAPI-DVD, Bidirectional buffer | 219 | C18 | AT2DATA[4] | I/O | ATAPI-HDD, Bidirectional buffer |
| 165 | A27 | AT1DATA[12] | I/O | ATAPI-DVD, Bidirectional buffer | 220 | E17 | AT2DATA[3] | I/O | ATAPI-HDD, Bidirectional buffer |

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 221 | B18 | AT2DATA[2] | I/O | ATAPI-HDD, Bidirectional buffer | 276 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 222 | GND | GND | – | Ground | 277 | C11 | AMCLK2 | I | CLOCK, Input buffer |
| 223 | A18 | AT2DATA[1] | I/O | ATAPI-HDD, Bidirectional buffer | 278 | GND | GND | – | Ground |
| 224 | VDD3 | VDD3 | – | 3.3V I/O power supply | 279 | D11 | ARDATA[1] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 225 | D17 | AT2DATA[0] | I/O | ATAPI-HDD, Bidirectional buffer | 280 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 226 | VDD | VDD | – | 1.2V LOGIC power supply | 281 | A10 | ARDATA[14] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 227 | C17 | AT2RESET | I/O | ATAPI-HDD, Bidirectional buffer | 282 | VDD | VDD | – | 1.2V LOGIC power supply |
| 228 | B17 | AT2DMARQ | I | ATAPI-HDD, Input buffer | 283 | B10 | ARDATA[15] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 229 | E16 | AT2DMACK | O | ATAPI-HDD, Output buffer | 284 | E11 | ARDATA[0] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 230 | GND | GND | – | Ground | 285 | C10 | ARDATA[4] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 231 | A17 | AT2DIOW | O | ATAPI-HDD, Output buffer | 286 | GND | GND | – | Ground |
| 232 | D16 | AT2DIOR | O | ATAPI-HDD, Output buffer | 287 | D10 | ARDATA[3] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 233 | C16 | AT2IORDY | I | ATAPI-HDD, Input buffer | 288 | A9 | ARDATA[11] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 234 | GND | GND | – | Ground | 289 | B9 | ARDATA[12] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 235 | B16 | AT2INTRQ | I | ATAPI-HDD, Input buffer | 290 | GND | GND | – | Ground |
| 236 | VDD3 | VDD3 | – | 3.3V I/O power supply | 291 | C9 | ARDATA[13] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 237 | A16 | AT2ADR[2] | I/O | ATAPI-HDD, Bidirectional buffer | 292 | E10 | ARDATA[2] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 238 | VDD | VDD | – | 1.2V LOGIC power supply | 293 | D9 | ARDATA[6] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 239 | E15 | AT2ADR[1] | I/O | ATAPI-HDD, Bidirectional buffer | 294 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 240 | GND | GND | – | Ground | 295 | A8 | ARDATA[10] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 241 | D15 | AT2ADR[0] | I/O | ATAPI-HDD, Bidirectional buffer | 296 | B8 | ARDATA[9] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 242 | VDD | VDD | – | 1.2V LOGIC power supply | 297 | C8 | ARWE | O | SDRAM-ATAPI, Output buffer |
| 243 | C15 | AT2CS[1] | O | ATAPI-HDD, Output buffer | 298 | VDD | VDD | – | 1.2V LOGIC power supply |
| 244 | GND | GND | – | Ground | 299 | A7 | ARDATA[8] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 245 | B15 | AT2CS[0] | O | ATAPI-HDD, Output buffer | 300 | E9 | ARDATA[5] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 246 | VDD | VDD | – | 1.2V LOGIC power supply | 301 | D8 | ARDQM[0] | O | SDRAM-ATAPI, Output buffer |
| 247 | A15 | AT2MODE | I | ATAPI-HDD, Input buffer | 302 | GND | GND | – | Ground |
| 248 | GND | GND | – | Ground | 303 | B7 | ARDQM[1] | O | SDRAM-ATAPI, Output buffer |
| 249 | GND | GND | – | Ground | 304 | C7 | ARCS[0] | O | SDRAM-ATAPI, Output buffer |
| 250 | A14 | RESET | I | Input buffer (5V tolerant) | 305 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 251 | VDD3 | VDD3 | – | 3.3V I/O power supply | 306 | A6 | ARCLKO | O | SDRAM-ATAPI, Output buffer |
| 252 | B14 | VDD | – | 1.2V LOGIC power supply | 307 | GND | GND | – | Ground |
| 253 | C14 | DBI | I | TEST, Input buffer | 308 | B6 | ARADRS[12] | O | SDRAM-ATAPI, Output buffer |
| 254 | GND | GND | – | Ground | 309 | E8 | ARDATA[7] | I/O | SDRAM-ATAPI, Bidirectional buffer |
| 255 | D14 | TRACE | I | TEST, Input buffer | 310 | D7 | ARRAS | O | SDRAM-ATAPI, Output buffer |
| 256 | E14 | VDD | – | 1.2V LOGIC power supply | 311 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 257 | A13 | PCO | O | CLOCK, 3 state output buffer | 312 | A5 | ARADRS[11] | O | SDRAM-ATAPI, Output buffer |
| 258 | GND | GND | – | Ground | 313 | C6 | ARADRS[13] | O | SDRAM-ATAPI, Output buffer |
| 259 | B13 | PLL3AVSS | – | | 314 | B5 | ARADRS[9] | O | SDRAM-ATAPI, Output buffer |
| 260 | C13 | PLL3AVDD | – | | 315 | VDD | VDD | – | 1.2V LOGIC power supply |
| 261 | D13 | VMCLK | I | CLOCK, Input buffer | 316 | E7 | ARCAS | O | SDRAM-ATAPI, Output buffer |
| 262 | E13 | PLL1AVDD | – | | 317 | D6 | ARADRS[14] | O | SDRAM-ATAPI, Output buffer |
| 263 | A12 | PLL1AVSS | – | | 318 | C5 | ARADRS[1] | O | SDRAM-ATAPI, Output buffer |
| 264 | VDD3 | VDD3 | – | 3.3V I/O power supply | 319 | GND | GND | – | Ground |
| 265 | B12 | ADCCLKO | O | CLOCK, Output buffer | 320 | B4 | ARADRS[3] | O | SDRAM-ATAPI, Output buffer |
| 266 | GND | GND | – | Ground | 321 | A4 | ARADRS[8] | O | SDRAM-ATAPI, Output buffer |
| 267 | C12 | VDD | – | 1.2V LOGIC power supply | 322 | A3 | ARADRS[7] | O | SDRAM-ATAPI, Output buffer |
| 268 | VDD3 | VDD3 | – | 3.3V I/O power supply | 323 | GND | GND | – | Ground |
| 269 | D12 | DVAMCLKO | O | CLOCK, Output buffer | 324 | E6 | ARCS[1] | O | SDRAM-ATAPI, Output buffer |
| 270 | GND | GND | – | Ground | 325 | D5 | ARADRS[0] | O | SDRAM-ATAPI, Output buffer |
| 271 | A11 | DACCLKO | O | CLOCK, Output buffer | 326 | C4 | ARADRS[2] | O | SDRAM-ATAPI, Output buffer |
| 272 | VDD3 | VDD3 | – | 3.3V I/O power supply | 327 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 273 | E12 | DVAMCLKI | I | AUDIO CLOCK, Input buffer | 328 | A2 | ARADRS[5] | O | SDRAM-ATAPI, Output buffer |
| 274 | GND | GND | – | Ground | 329 | B3 | ARADRS[6] | O | SDRAM-ATAPI, Output buffer |
| 275 | B11 | AMCLK1 | I | CLOCK, Input buffer | 330 | B2 | ARADRS[4] | O | SDRAM-ATAPI, Output buffer |

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 331 | GND | GND | – | Ground | 386 | VDD | VDD | – | 1.2V LOGIC power supply |
| 332 | E5 | ARADRS[10] | O | SDRAM-ATAPI, Output buffer | 387 | GND | GND | – | Ground |
| 333 | D4 | SRCBCKI | I | AUDIO, Input buffer | 388 | L3 | SPIDATAI | I/O | HOST, Bidirectional buffer |
| 334 | VDD3 | VDD3 | – | 3.3V I/O power supply | 389 | VDD | VDD | – | 1.2V LOGIC power supply |
| 335 | C3 | SRCLRCKI | I | AUDIO, Input buffer | 390 | M5 | SPIDATAO | I/O | HOST, Bidirectional buffer |
| 336 | B1 | SRCDATAI | I | AUDIO, Input buffer | 391 | GND | GND | – | Ground |
| 337 | A1 | VDD | – | 1.2V LOGIC power supply | 392 | L2 | SPICLK | I/O | HOST, Bidirectional buffer |
| 338 | GND | GND | – | Ground | 393 | GND | GND | – | Ground |
| 339 | C2 | SRCBCKO | O | AUDIO, Output buffer | 394 | L1 | DDATA[0] | I/O | SDRAM-DEC, Bidirectional buffer |
| 340 | VDD | VDD | – | 1.2V LOGIC power supply | 395 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 341 | D3 | SRCLRCKO | O | AUDIO, Output buffer | 396 | M4 | DDATA[14] | I/O | SDRAM-DEC, Bidirectional buffer |
| 342 | E4 | SRCDATAO | O | AUDIO, Output buffer | 397 | M3 | DDATA[15] | I/O | SDRAM-DEC, Bidirectional buffer |
| 343 | F5 | SPDIFI | I | AUDIO, Input buffer | 398 | M2 | DDATA[2] | I/O | SDRAM-DEC, Bidirectional buffer |
| 344 | D2 | SPDIFO | O | AUDIO, Output buffer | 399 | VDD | VDD | – | 1.2V LOGIC power supply |
| 345 | C1 | DVLRCK | I/O | AUDIO, Bidirectional buffer | 400 | N5 | DDATA[11] | I/O | SDRAM-DEC, Bidirectional buffer |
| 346 | E3 | DVBCK | I/O | AUDIO, Bidirectional buffer | 401 | GND | GND | – | Ground |
| 347 | D1 | DVADATA | I/O | AUDIO, Bidirectional buffer | 402 | M1 | DDATA[1] | I/O | SDRAM-DEC, Bidirectional buffer |
| 348 | F4 | ACMOD[1] | I | AUDIO, Input buffer | 403 | GND | GND | – | Ground |
| 349 | G5 | ACMOD[0] | I | AUDIO, Input buffer | 404 | N4 | DDATA[12] | I/O | SDRAM-DEC, Bidirectional buffer |
| 350 | E1 | LRCKI | I | AUDIO, Input buffer | 405 | N3 | DDATA[13] | I/O | SDRAM-DEC, Bidirectional buffer |
| 351 | E2 | BCKI | I | AUDIO, Input buffer | 406 | N2 | DDATA[3] | I/O | SDRAM-DEC, Bidirectional buffer |
| 352 | GND | GND | – | Ground | 407 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 353 | F3 | ADATAI | I | AUDIO, Input buffer | 408 | N1 | DDATA[4] | I/O | SDRAM-DEC, Bidirectional buffer |
| 354 | GND | GND | – | Ground | 409 | P5 | DDATA[8] | I/O | SDRAM-DEC, Bidirectional buffer |
| 355 | G4 | LRCKO | O | AUDIO, Output buffer | 410 | P4 | DDATA[9] | I/O | SDRAM-DEC, Bidirectional buffer |
| 356 | VDD | VDD | – | 1.2V LOGIC power supply | 411 | VDD | VDD | – | 1.2V LOGIC power supply |
| 357 | H5 | BCKO | O | AUDIO, Output buffer | 412 | P3 | DDATA[10] | I/O | SDRAM-DEC, Bidirectional buffer |
| 358 | F1 | ADATAO | O | DVD-AUDIO, Output buffer | 413 | GND | GND | – | Ground |
| 359 | F2 | DVDADT[7] | O | DVD-AUDIO, Output buffer | 414 | P2 | DDATA[6] | I/O | SDRAM-DEC, Bidirectional buffer |
| 360 | G2 | DVDADT[6] | O | DVD-AUDIO, Output buffer | 415 | GND | GND | – | Ground |
| 361 | G3 | DVDADT[5] | O | DVD-AUDIO, Output buffer | 416 | P1 | DDATA[5] | I/O | SDRAM-DEC, Bidirectional buffer |
| 362 | J5 | DVDADT[4] | O | DVD-AUDIO, Output buffer | 417 | R1 | DDATA[7] | I/O | SDRAM-DEC, Bidirectional buffer |
| 363 | H4 | DVDADT[3] | O | DVD-AUDIO, Output buffer | 418 | R2 | DDQM[0] | O | SDRAM-DEC, Output buffer |
| 364 | G1 | DVDADT[2] | O | DVD-AUDIO, Output buffer | 419 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 365 | H3 | DVDADT[1] | O | DVD-AUDIO, Output buffer | 420 | R3 | DWE | O | SDRAM-DEC, Output buffer |
| 366 | H2 | DVDADT[0] | O | DVD-AUDIO, Output buffer | 421 | VDD | VDD | – | 1.2V LOGIC power supply |
| 367 | H1 | DVDAADR[1] | O | DVD-AUDIO, Output buffer | 422 | R4 | DDQM[1] | O | SDRAM-DEC, Output buffer |
| 368 | K5 | DVDAADR[0] | O | DVD-AUDIO, Output buffer | 423 | GND | GND | – | Ground |
| 369 | J4 | DVDAREQ | I/O | DVD-AUDIO, Bidirectional buffer | 424 | R5 | DCLKO | O | SDRAM-DEC, Output buffer |
| 370 | GND | GND | – | Ground | 425 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 371 | J3 | DVDAACK | O | DVD-AUDIO, Output buffer | 426 | VDD | VDD | – | 1.2V LOGIC power supply |
| 372 | VDD | VDD | – | 1.2V LOGIC power supply | 427 | T1 | DCAS | O | SDRAM-DEC, Output buffer |
| 373 | J2 | SCICS[1] | I/O | HOST, Bidirectional buffer | 428 | GND | GND | – | Ground |
| 374 | VDD3 | VDD3 | – | 3.3V I/O power supply | 429 | T2 | DRAS | – | SDRAM-DEC, Output buffer |
| 375 | J1 | SCICS[0] | I/O | HOST, Bidirectional buffer | 430 | GND | GND | – | Ground |
| 376 | VDD | VDD | – | 1.2V LOGIC power supply | 431 | T3 | DCS | O | SDRAM-DEC, Output buffer |
| 377 | K4 | SCIDATA[1] | I/O | HOST, Bidirectional buffer | 432 | T4 | DADRS[11] | O | SDRAM-DEC, Output buffer |
| 378 | GND | GND | – | Ground | 433 | U1 | DBS[0] | O | SDRAM-DEC, Output buffer |
| 379 | L5 | SCIDATA[0] | I/O | HOST, Bidirectional buffer | 434 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 380 | K3 | VDD | – | 1.2V LOGIC power supply | 435 | T5 | DADRS[9] | O | SDRAM-DEC, Output buffer |
| 381 | K2 | SCICLK[1] | I/O | HOST, Bidirectional buffer | 436 | U2 | DBS[1] | O | SDRAM-DEC, Output buffer |
| 382 | GND | GND | – | Ground | 437 | U3 | DADRS[10] | O | SDRAM-DEC, Output buffer |
| 383 | K1 | SCICLK[0] | I/O | HOST, Bidirectional buffer | 438 | VDD | VDD | – | 1.2V LOGIC power supply |
| 384 | GND | GND | – | Ground | 439 | U4 | DADRS[7] | O | SDRAM-DEC, Output buffer |
| 385 | L4 | SPICS | I/O | HOST, Bidirectional buffer | 440 | GND | GND | – | Ground |

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 441 | V1 | DADRS[0] | O | SDRAM-DEC, Output buffer | 496 | VDD | VDD | – | 1.2V LOGIC power supply |
| 442 | GND | GND | – | Ground | 497 | AD4 | HDACK[0] | O | Output buffer, 4mA |
| 443 | V2 | DADRS[1] | O | SDRAM-DEC, Output buffer | 498 | AF1 | HDREQ[1] | I | HOST, Input buffer |
| 444 | VDD | VDD | – | 1.2V LOGIC power supply | 499 | AE3 | HDREQ[0] | I | HOST, Input buffer |
| 445 | U5 | DADRS[8] | O | SDRAM-DEC, Output buffer | 500 | AC5 | HWAIT | I | HOST, Input buffer |
| 446 | GND | GND | – | Ground | 501 | AF2 | HOE | O | HOST, Output buffer |
| 447 | V3 | DADRS[5] | O | SDRAM-DEC, Output buffer | 502 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 448 | VDD3 | VDD3 | – | 3.3V I/O power supply | 503 | GND | GND | – | Ground |
| 449 | V4 | DADRS[6] | O | SDRAM-DEC, Output buffer | 504 | AE4 | VDD | – | 1.2V LOGIC power supply |
| 450 | W1 | DADRS[3] | O | SDRAM-DEC, Output buffer | 505 | AD5 | HCS[5] | O | HOST, Output buffer |
| 451 | W2 | DADRS[2] | O | SDRAM-DEC, Output buffer | 506 | AG2 | HCS[4] | O | HOST, Output buffer |
| 452 | VDD | VDD | – | 1.2V LOGIC power supply | 507 | AF3 | HCS[3] | O | HOST, Output buffer |
| 453 | W3 | DADRS[4] | O | SDRAM-DEC, Output buffer | 508 | AG3 | HCS[2] | O | HOST, Output buffer |
| 454 | GND | GND | – | Ground | 509 | AH2 | HCS[1] | O | HOST, Output buffer |
| 455 | GND | GND | – | Ground | 510 | GND | GND | – | Ground |
| 456 | GND | GND | – | Ground | 511 | AF4 | HCS[0] | O | HOST, Output buffer |
| 457 | V5 | INT[7] | I/O | HOST, Bidirectional buffer | 512 | VDD | VDD | – | 1.2V LOGIC power supply |
| 458 | VDD | VDD | – | 1.2V LOGIC power supply | 513 | AD6 | HADRS[10] | I/O | HOST, Bidirectional buffer |
| 459 | W4 | INT[6] | I/O | HOST, Bidirectional buffer | 514 | GND | GND | – | Ground |
| 460 | Y1 | INT[5] | I/O | HOST, Bidirectional buffer | 515 | AE5 | HADRS[11] | I/O | HOST, Bidirectional buffer |
| 461 | Y2 | INT[4] | I/O | HOST, Bidirectional buffer | 516 | AG4 | HADRS[13] | I/O | HOST, Bidirectional buffer |
| 462 | VDD3 | VDD3 | – | 3.3V I/O power supply | 517 | AH3 | HADRS[30] | I/O | HOST, Bidirectional buffer |
| 463 | Y3 | INT[3] | I/O | HOST, Bidirectional buffer | 518 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 464 | GND | GND | – | Ground | 519 | AF5 | HADRS[12] | I/O | HOST, Bidirectional buffer |
| 465 | Y4 | INT[2] | I/O | HOST, Bidirectional buffer | 520 | GND | GND | – | Ground |
| 466 | VDD | VDD | – | 1.2V LOGIC power supply | 521 | AH4 | HADRS[14] | I/O | HOST, Bidirectional buffer |
| 467 | W5 | INT[1] | I/O | HOST, Bidirectional buffer | 522 | AE6 | HDATA[1] | I/O | HOST, Bidirectional buffer |
| 468 | AA1 | INT[0] | I/O | HOST, Bidirectional buffer | 523 | AD7 | HADRS[9] | I/O | HOST, Bidirectional buffer |
| 469 | AA2 | SCLK[1] | I/O | HOST, Bidirectional buffer | 524 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 470 | AA3 | SCLK[0] | I/O | HOST, Bidirectional buffer | 525 | AG5 | HDATA[15] | I/O | HOST, Bidirectional buffer |
| 471 | AB1 | CTS[3] | I/O | HOST, Bidirectional buffer | 526 | GND | GND | – | Ground |
| 472 | GND | GND | – | Ground | 527 | AH5 | HDATA[14] | I/O | HOST, Bidirectional buffer |
| 473 | Y5 | CTS[2] | I/O | HOST, Bidirectional buffer | 528 | GND | GND | – | Ground |
| 474 | GND | GND | – | Ground | 529 | AF6 | HDATA[0] | I/O | HOST, Bidirectional buffer |
| 475 | AA4 | CTS[1] | I/O | HOST, Bidirectional buffer | 530 | AD8 | HDATA[6] | I/O | HOST, Bidirectional buffer |
| 476 | VDD | VDD | – | 1.2V LOGIC power supply | 531 | AE7 | HDATA[2] | I/O | HOST, Bidirectional buffer |
| 477 | AB3 | CTS[0] | I/O | HOST, Bidirectional buffer | 532 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 478 | AB2 | RTS[3] | I/O | HOST, Bidirectional buffer | 533 | AG6 | HDATA[12] | I/O | HOST, Bidirectional buffer |
| 479 | AC2 | RTS[2] | I/O | HOST, Bidirectional buffer | 534 | VDD | VDD | – | 1.2V LOGIC power supply |
| 480 | AC1 | RTS[1] | I/O | HOST, Bidirectional buffer | 535 | AH6 | HDATA[13] | I/O | HOST, Bidirectional buffer |
| 481 | AA5 | RTS[0] | I/O | HOST, Bidirectional buffer | 536 | AG7 | HDATA[11] | I/O | HOST, Bidirectional buffer |
| 482 | VDD3 | VDD3 | – | 3.3V I/O power supply | 537 | AF7 | HDATA[3] | I/O | HOST, Bidirectional buffer |
| 483 | AB4 | RX[3] | I/O | HOST, Bidirectional buffer | 538 | GND | GND | – | Ground |
| 484 | GND | GND | – | Ground | 539 | AE8 | HDATA[5] | I/O | HOST, Bidirectional buffer |
| 485 | AC3 | RX[2] | I/O | HOST, Bidirectional buffer | 540 | GND | GND | – | Ground |
| 486 | VDD | VDD | – | 1.2V LOGIC power supply | 541 | AD9 | HDATA[7] | I/O | HOST, Bidirectional buffer |
| 487 | AD2 | RX[1] | I/O | HOST, Bidirectional buffer | 542 | AF8 | HDATA[4] | I/O | HOST, Bidirectional buffer |
| 488 | AD1 | RX[0] | I/O | HOST, Bidirectional buffer | 543 | AH7 | HDATA[10] | I/O | HOST, Bidirectional buffer |
| 489 | AB5 | TX[3] | I/O | HOST, Bidirectional buffer | 544 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 490 | AC4 | TX[2] | I/O | HOST, Bidirectional buffer | 545 | AG8 | HDATA[8] | I/O | HOST, Bidirectional buffer |
| 491 | AD3 | TX[1] | I/O | HOST, Bidirectional buffer | 546 | VDD | VDD | – | 1.2V LOGIC power supply |
| 492 | GND | GND | – | Ground | 547 | AH8 | HDATA[9] | I/O | HOST, Bidirectional buffer |
| 493 | AE1 | TX[0] | I/O | HOST, Bidirectional buffer | 548 | AE9 | HDWE | O | HOST, Output buffer |
| 494 | GND | GND | – | Ground | 549 | AF9 | DQMWS[0] | O | HOST, Output buffer |
| 495 | AE2 | HDACK[1] | O | HOST, Output buffer | 550 | GND | GND | – | Ground |

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 551 | AD10 | HDCS[1] | O | HOST, Output buffer | 606 | AG16 | TMS | I | TEST, nput buffer |
| 552 | GND | GND | – | Ground | 607 | GND | GND | – | Ground |
| 553 | AG9 | DQMWS[1] | O | HOST, Output buffer | 608 | AF16 | TDO | O | TEST, Output buffer |
| 554 | VDD3 | VDD3 | – | 3.3V I/O power supply | 609 | VDD | VDD | – | 1.2V LOGIC power supply |
| 555 | AH9 | HCLKO | O | HOST, Output buffer | 610 | AE16 | TDI | I | TEST, Input buffer |
| 556 | GND | GND | – | Ground | 611 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 557 | AE10 | HDCS[0] | O | HOST, Output buffer | 612 | AH17 | TRST | I | TEST, Input buffer |
| 558 | VDD3 | VDD3 | – | 3.3V I/O power supply | 613 | GND | GND | – | Ground |
| 559 | AD11 | HADRS[15] | I/O | HOST, Bidirectional buffer | 614 | AD16 | TCK | I | TEST, Input buffer |
| 560 | VDD | VDD | – | 1.2V LOGIC power supply | 615 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 561 | AF10 | HCAS | O | HOST, Output buffer | 616 | AG17 | PLLRST | I | CLOCK, Input buffer |
| 562 | AG10 | HRAS | O | HOST, Output buffer | 617 | GND | GND | – | Ground |
| 563 | AH10 | HCLKEN | O | HOST, Output buffer | 618 | AF17 | DVVCLKO | O | CLOCK, Output buffer |
| 564 | GND | GND | – | Groud | 619 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 565 | AE11 | HADRS[16] | I/O | HOST, Bidirectional buffer | 620 | AE17 | PXCLK | O | CLOCK, Output buffer |
| 566 | GND | GND | – | Ground | 621 | GND | GND | – | Ground |
| 567 | AF11 | HADRS[17] | I/O | HOST, Bidirectional buffer | 622 | AH18 | REC656I[7] | I | VIDEO-Digital, Input buffer |
| 568 | AD12 | HADRS[27] | I/O | HOST, Bidirectional buffer | 623 | VDD | VDD | – | 1.2V LOGIC power supply |
| 569 | AG11 | HADRS[20] | I/O | HOST, Bidirectional buffer | 624 | AG18 | REC656I[6] | I | VIDEO-Digital, Input buffer |
| 570 | VDD3 | VDD3 | – | 3.3V I/O power supply | 625 | GND | GND | – | Ground |
| 571 | AH11 | HADRS[21] | I/O | HOST, Bidirectional buffer | 626 | AD17 | REC656I[5] | I | VIDEO-Digital, Input buffer |
| 572 | VDD | VDD | – | 1.2V LOGIC power supply | 627 | AF18 | REC656I[4] | I | VIDEO-Digital, Input buffer |
| 573 | AE12 | HADRS[19] | I/O | HOST, Bidirectional buffer | 628 | AE18 | REC656I[3] | I | VIDEO-Digital, Input buffer |
| 574 | AF12 | HADRS[18] | I/O | HOST, Bidirectional buffer | 629 | AH19 | REC656I[2] | I | VIDEO-Digital, Input buffer |
| 575 | AG12 | HADRS[23] | I/O | HOST, Bidirectional buffer | 630 | AG19 | REC656I[1] | I | VIDEO-Digital, Input buffer |
| 576 | GND | GND | – | Ground | 631 | AF19 | REC656I[0] | I | VIDEO-Digital, Input buffer |
| 577 | AD13 | HADRS[28] | I/O | HOST, Bidirectional buffer | 632 | AH20 | DVVIDEO[7] | I/O | VIDEO-Digital, Bidirectional buffer |
| 578 | VDD | VDD | – | 1.2V LOGIC power supply | 633 | AD18 | DVVIDEO[6] | I/O | VIDEO-Digital, Bidirectional buffer |
| 579 | AH12 | HADRS[22] | I/O | HOST, Bidirectional buffer | 634 | AE19 | DVVIDEO[5] | I/O | VIDEO-Digital, Bidirectional buffer |
| 580 | GND | GND | – | Ground | 635 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 581 | AE13 | HADRS[29] | I/O | HOST, Bidirectional buffer | 636 | AG20 | DVVCLKI | I | CLOCK, Input buffer |
| 582 | VDD | VDD | – | 1.2V LOGIC power supply | 637 | AF20 | PLL2AVDD | – | |
| 583 | AF13 | HADRS[24] | I/O | HOST, Bidirectional buffer | 638 | AH21 | PLL2AVSS | – | |
| 584 | VDD3 | VDD3 | – | 3.3V I/O power supply | 639 | AD19 | R656CLKI | I | CLOCK, Input buffer |
| 585 | AG13 | HADRS[25] | I/O | HOST, Bidirectional buffer | 640 | GND | GND | – | Ground |
| 586 | GND | GND | – | Ground | 641 | AE20 | ADMCLKI | I | CLOCKI, Input buffer |
| 587 | AH13 | HADRS[26] | I/O | HOST, Bidirectional buffer | 642 | VDD3 | VDD3 | – | 3.3V I/O power supply |
| 588 | GND | GND | – | Ground | 643 | AG21 | DVVIDEO[4] | I/O | VIDEO-Digital, Bidirectional buffer |
| 589 | GND | GND | – | Ground | 644 | AF21 | DVVIDEO[3] | I/O | VIDEO-Digital, Bidirectional buffer |
| 590 | AD14 | TESTMOD[6] | I | TEST, Input buffer | 645 | AD20 | DVVIDEO[2] | I/O | VIDEO-Digital, Bidirectional buffer |
| 591 | AE14 | VDD | – | 1.2V LOGIC power supply | 646 | AH22 | DVVIDEO[1] | I/O | VIDEO-Digital, Bidirectional buffer |
| 592 | AF14 | TESTMOD[5] | I | TEST, Input buffer | 647 | AG22 | DVVIDEO[0] | I/O | VIDEO-Digital, Bidirectional buffer |
| 593 | GND | GND | – | Ground | 648 | AE21 | REC656O[7] | O | VIDEO-Digital, Output buffer |
| 594 | AG14 | TESTMOD[4] | I | TEST, Input buffer | 649 | AF22 | REC656O[6] | O | VIDEO-Digital, Output buffer |
| 595 | VDD | VDD | – | 1.2V LOGIC power supply | 650 | VDD | VDD | – | 1.2V LOGIC power supply |
| 596 | AH14 | TESTMOD[3] | I | TEST, Input buffer | 651 | AH23 | DVREQ | I | VIDEO-Digital, Input buffer |
| 597 | GND | GND | – | Ground | 652 | GND | GND | – | Ground |
| 598 | AH15 | TESTMOD[2] | I | TEST, Input buffer | 653 | AG23 | DVACK | O | VIDEO-Digital, Output buffer |
| 599 | VDD | VDD | – | 1.2V LOGIC power supply | 654 | GND | GND | – | Ground |
| 600 | AG15 | TESTMOD[1] | I | TEST, Input buffer | 655 | AE22 | AVSS1DA10 | – | |
| 601 | GND | GND | – | Ground | 656 | AD21 | GOUT | O | VIDEO-Analog |
| 602 | AF15 | TESTMOD[0] | I | TEST, Input buffer | 657 | AH24 | AVDD1DA10 | – | |
| 603 | AE15 | CSYNC | I | CLOCK, Input buffer | 658 | AF23 | BOUT | O | VIDEO-Analog |
| 604 | AD15 | VIPWM | O | CLOCK, Output buffer | 659 | AE23 | AVDD1DA10 | – | |
| 605 | AH16 | PLLON | I | TEST, Input buffer | 660 | AG24 | ROUT | O | VIDEO-Analog |

| No. | BALL Address | Pin Name | I/O | Function | No. | BALL Address | Pin Name | I/O | Function |
|---|---|---|---|---|---|---|---|---|---|
| 661 | AD22 | IREF[0] | – | VIDEO-Analog | 669 | AD23 | REC656O[4] | O | VIDEO-Digital, Output buffer |
| 662 | AF24 | IREF[1] | – | VIDEO-Analog | 670 | AH27 | REC656O[3] | O | VIDEO-Digital, Output buffer |
| 663 | AG25 | YOUT | O | VIDEO-Analog | 671 | AG26 | REC656O[2] | O | VIDEO-Digital, Output buffer |
| 664 | AH25 | AVSS2DA10 | – | | 672 | AG27 | REC656O[1] | O | VIDEO-Digital, Output buffer |
| 665 | AE24 | COUT | O | VIDEO-Analog | 673 | GND | GND | – | Ground |
| 666 | AH26 | AVDD2DA10 | – | | 674 | AD24 | REC656O[0] | O | VIDEO-Digital, Output buffer |
| 667 | GND | GND | – | Ground | 675 | AE25 | AGCCTL | O | VIDEO-Analog |
| 668 | AF25 | REC656O[5] | O | VIDEO-Digital, Output buffer | | | | | |

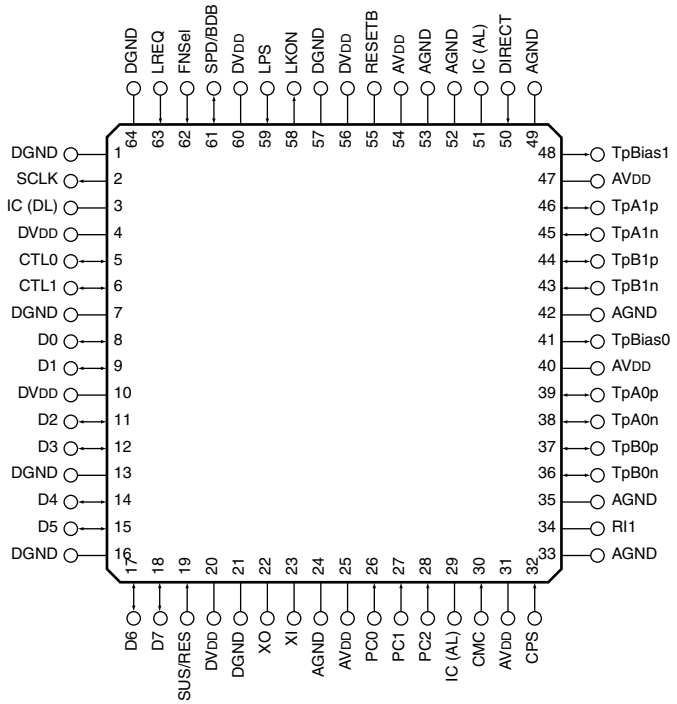
● **Others**

| BALL Address | Pin Name | BALL Address | Pin Name | BALL Address | Pin Name | BALL Address | Pin Name |
|---|---|---|---|---|---|---|---|
| AA23 | GND | P12 | GND | AC11 | VDD | AB23 | VDD3 |
| AA6 | GND | P13 | GND | AC14 | VDD | AB6 | VDD3 |
| AC12 | GND | P14 | GND | AC6 | VDD | AC10 | VDD3 |
| AC17 | GND | P15 | GND | AC8 | VDD | AC13 | VDD3 |
| AC20 | GND | P16 | GND | L6 | VDD | AC16 | VDD3 |
| AC9 | GND | P17 | GND | AC11 | VDD | AC19 | VDD3 |
| F11 | GND | R12 | GND | AC14 | VDD | AC22 | VDD3 |
| F14 | GND | R13 | GND | AC6 | VDD | AC7 | VDD3 |
| F17 | GND | R14 | GND | AC8 | VDD | F10 | VDD3 |
| F20 | GND | R15 | GND | L6 | VDD | F13 | VDD3 |
| F23 | GND | R16 | GND | P6 | VDD | F16 | VDD3 |
| F8 | GND | R17 | GND | U6 | VDD | F19 | VDD3 |
| H6 | GND | R23 | GND | Y6 | VDD | F22 | VDD3 |
| J23 | GND | R6 | GND | F12 | VDD | F7 | VDD3 |
| M12 | GND | T12 | GND | F6 | VDD | G23 | VDD3 |
| M13 | GND | T13 | GND | F9 | VDD | G6 | VDD3 |
| M14 | GND | T14 | GND | J6 | VDD | K23 | VDD3 |
| M15 | GND | T15 | GND | AC15 | VDD | K6 | VDD3 |
| M16 | GND | T16 | GND | AC18 | VDD | N23 | VDD3 |
| M17 | GND | T17 | GND | AC21 | VDD | N6 | VDD3 |
| M23 | GND | U12 | GND | AC23 | VDD | T23 | VDD3 |
| M6 | GND | U13 | GND | F15 | VDD | T6 | VDD3 |
| N12 | GND | U14 | GND | F18 | VDD | W23 | VDD3 |
| N13 | GND | U15 | GND | F21 | VDD | W6 | VDD3 |
| N14 | GND | U16 | GND | H23 | VDD | | |
| N15 | GND | U17 | GND | L23 | VDD | | |
| N16 | GND | V23 | GND | P23 | VDD | | |
| N17 | GND | V6 | GND | U23 | VDD | | |
| | | | | Y23 | VDD | | |

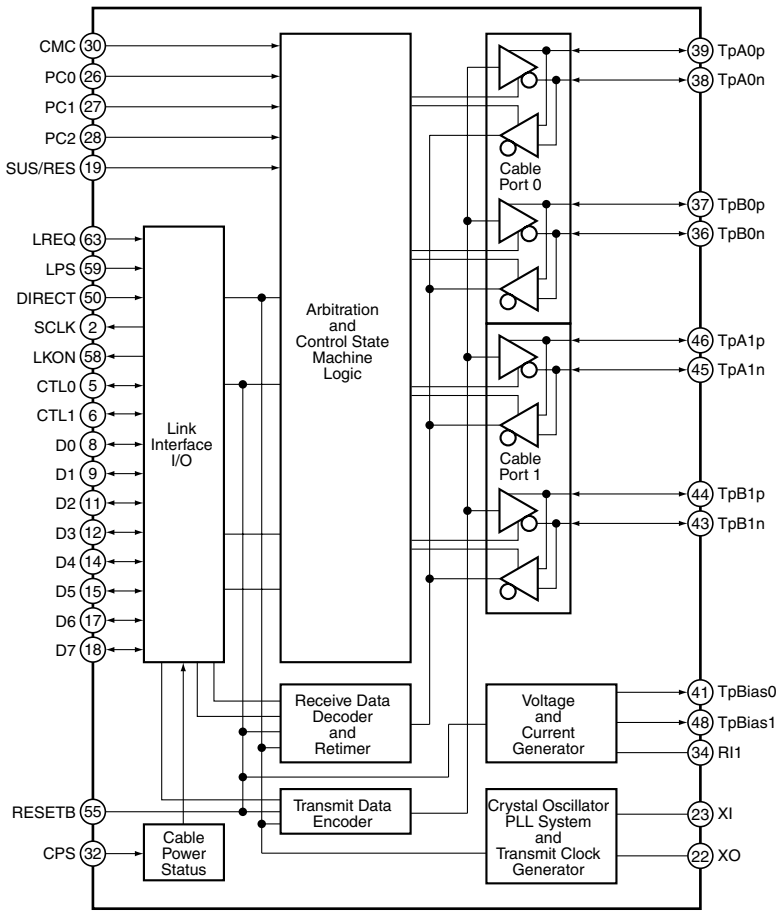
## UPD72852AGB-8EU (MAIN ASSY : IC5101)

• IEEE1394 Physical IC

### ● Pin Arrangement




### ● Block Diagram



## ● Pin Function

### • Cable Interface Pins

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 39 | TpA0p | I/O | Port 0 twisted pair cable A positive phase I/O |
| 38 | TpA0n | I/O | Port 0 twisted pair cable A negative phase I/O |
| 37 | TpB0p | I/O | Port 0 twisted pair cable B positive phase I/O |
| 36 | TpB0n | I/O | Port 0 twisted pair cable B negative phase I/O |
| 46 | TpA1p | I/O | Port 1 twisted pair cable A positive phase I/O |
| 45 | TpA1n | I/O | Port 1 twisted pair cable A negative phase I/O |
| 44 | TpB1p | I/O | Port 1 twisted pair cable B positive phase I/O |
| 43 | TpB1n | I/O | Port 1 twisted pair cable B negative phase I/O |
| 19 | SUS/RES | I | Suspend/Resume function select<br>1 : Suspend/Resume on (IEEE1394a-2000 compliant)<br>0 : Suspend/Resume off (P1394a draft 1.3 compliant) |
| 32 | CPS | I | Cable power status<br>Connect to the cable through a 390 kΩ resistor and to the GND through a 100 kΩ resistor.<br>0 : Cable power fail<br>1 : Cable power on |

### • Link Interface Pins

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 8 | D0 | I/O | Data input/output (bit 0) |
| 9 | D1 | I/O | Data input/output (bit 1) |
| 11 | D2 | I/O | Data input/output (bit 2) |
| 12 | D3 | I/O | Data input/output (bit 3) |
| 14 | D4 | I/O | Data input/output (bit 4) |
| 15 | D5 | I/O | Data input/output (bit 5) |
| 17 | D6 | I/O | Data input/output (bit 6) |
| 18 | D7 | I/O | Data input/output (bit 7) |
| 5 | CTL0 | I/O | Link interface control (bit 0) |
| 6 | CTL1 | I/O | Link interface control (bit 1) |
| 63 | LREQ | I | Link request input |
| 2 | SCLK | O | Link control output clock<br>LPS 1 : 49.152 MHz output<br>LPS 0 : Clamp to 0 (The clock signal will be output within 25 μsec after change to "0") |
| 59 | LPS | I | Link power status input<br>0 : Link power off<br>1 : Link power on (PHY/Link direct connection) |
| 58 | LKON | O | Link-on signal output<br>Link-on signal is 6.1444 MHz clock output. |
| 50 | DIRECT | I | PHY/Link isolation barrier control input<br>0 : Isolation barrier<br>1 : PHY/Link direct connection |

• **Control Pins**

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 26 | PC0 | I | Power class set input<br>This pin status will be loaded to Pwr_class bit which allocated to PHY register 4H.<br>IEEE1394a-2000 chapter [4.3.4.1] |
| 27 | PC1 | I | |
| 28 | PC2 | I | |
| 30 | CMC | I | Configuration manager capable setting<br>This pin status will be loaded to Contender bit which allocated to PHY register 4H.<br>0 : Non contender<br>1 : Contender |
| 55 | RESETB | I | Power on reset input<br>Connect to GND through a 0.1 μF capacitor.<br>0 : Reset<br>1 : Normal |
| 61 | SPD/BDB | I<br>FNSel = 0 | Speed select (UPD72852GB)<br>0 : MAX. S200<br>1 : MAX. S400 |
| | | O<br>FNSel = 1 | BIAS Detected output (Logical Inverse)<br>0 : BIAS is coming from some port.<br>1 : BIAS is not coming from any port. |

• **IC**

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 29, 51 | IC (AL) | – | Internally Connected (Low Clamped)<br>Connected to GND. |
| 3 | IC (DL) | – | Internally Connected (Low Clamped)<br>Connected to GND. |

• **Power Supply Pins**

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 25, 31, 40, 47, 54 | $AV_{DD}$ | – | Analog power |
| 24, 33, 35, 42, 49, 52, 53 | AGND | – | Analog GND |
| 4, 10, 20, 56, 60 | $DV_{DD}$ | – | Digital $V_{DD}$ |
| 1, 7, 13, 16, 21, 57, 64 | DGND | – | Digital GND |

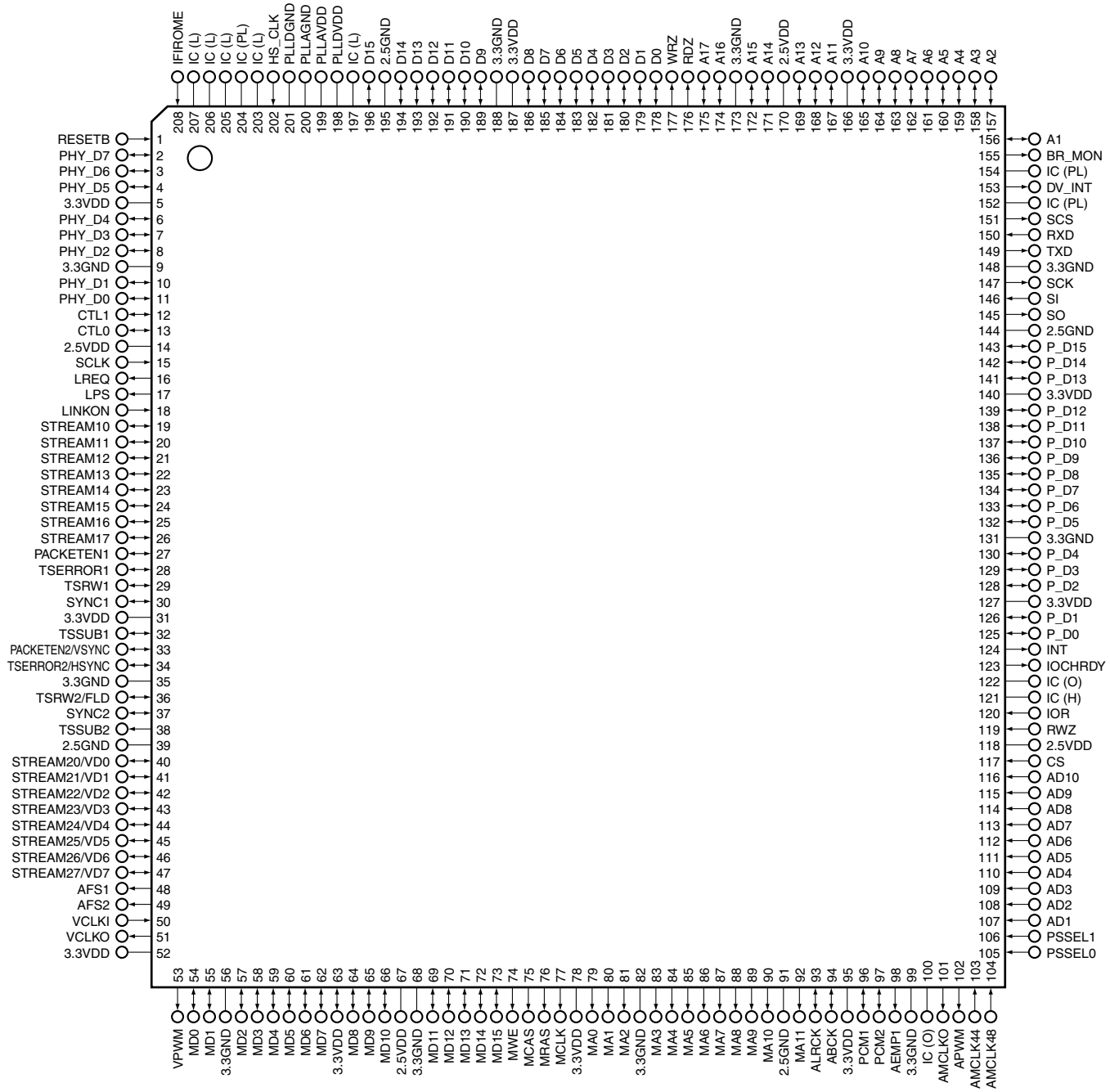
• **Other Pins**

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 41 | TpBias0 | O | Port 0 twisted pair output |
| 48 | TpBias1 | O | Port 1 twisted pair output |
| 34 | RI1 | – | Resistor connection pin 1 for reference current generator<br>Please connect to GND pin through the 9.1 kΩ resistor. |
| 23 | XI | – | Crystal oscillator connection XI |
| 22 | XO | – | Crystal oscillator connection XO |
| 62 | FNSel | I | Function Select<br>0 : #61 acts as SPD (UPD72852GB compliant)<br>1 : #61 acts as BDB |

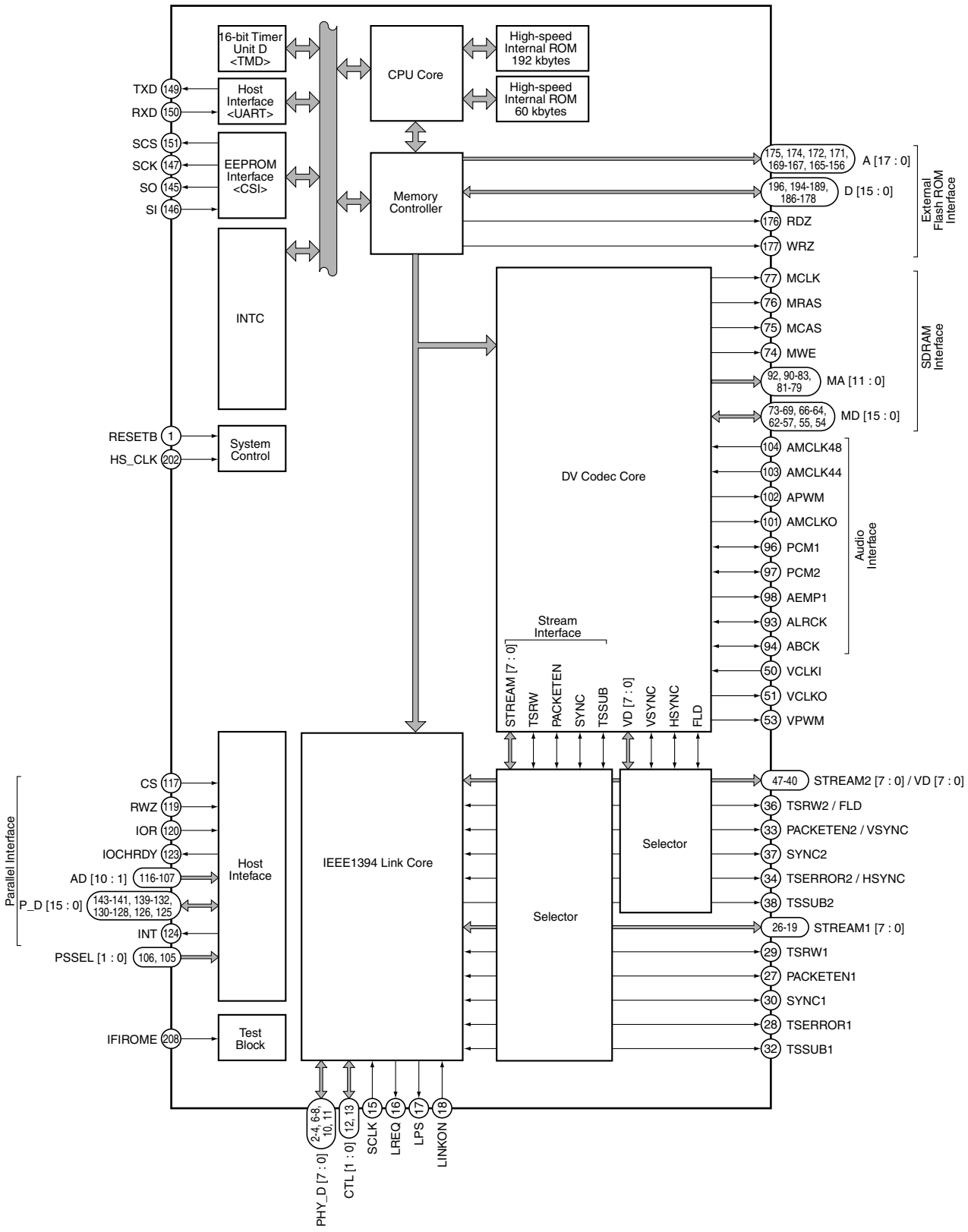
## UPD72893BGD-LML (MAIN ASSY : IC5202)

- IEEE1394 Link IC

### ● Pin Arrangement



## ● Block Diagram



## ● Pin Function

### (1) Link relation

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 18 | LINKON | I | Link-on signal input<br>Clock input<br>When LPS is active, input 0. | – |
| 17 | LPS | O | Link power status output<br>Link power OFF : 0<br>Link power ON : 2.7 MHz pulse output (20 dividing of host clock 54 MHz) | – |
| 16 | LREQ | O | Link request output | – |
| 15 | SCLK | I | Clock input for Link control<br>LPS is active : 49.152 MHz input<br>LPS = 0 0 : fixed | – |
| 12, 13 | CTL [1 : 0] | I/O | PHY/Link control signal input/output | – |
| 2-4, 6-8, 10,11 | PHY_D [7 : 0] | I/O | Data input/output between PHY-Link | – |
| 26-19 | STREAM1 [7 : 0] | I/O | ISO data bus of stream interface 1 | – |
| 27 | PACKETEN1 | I/O | Packet enable signal input/output of stream interface 1 | H/L |
| 28 | TSERROR1 | I/O | Packet error signal input/output of stream interface 1 | H/L |
| 29 | TSRW1 | I/O | Data read/write enable signal input/output of stream interface 1 | – |
| 30 | SYNC1 | I/O | Frame synchronous signal input/output of stream interface 1 | H/L |
| 32 | TSSUB1 | I/O | Not used Connect to VDD or GND through a resistor. | H/L |
| 47-40 | STREAM2 [7 : 0] | I/O | ISO data bus of stream interface 2 | – |
| 33 | PACKETEN2 | I/O | Packet enable signal input/output of stream interface 2 | H/L |
| 34 | TSERROR2 | I/O | Packet error signal input/output of stream interface 2 | H/L |
| 36 | TSRW2 | I/O | Data read/write enable signal input/output of stream interface 2 | – |
| 37 | SYNC2 | I/O | Frame synchronous signal input/output of stream interface 2 | H/L |
| 38 | TSSUB2 | O | Not used Set to open. | – |

### (2) Video interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 50 | VCLKI | I | Video clock input (27 MHz) | – |
| 51 | VCLKO | O | Video clock output (27 MHz) | – |
| 47-40 | VD [7 : 0] | I/O | Video data signal | – |
| 33 | VSYNC | I/O | Video vertical sync. signal | L |
| 34 | HSYNC | I/O | Video horizontal sync. signal | L |
| 36 | FLD | I/O | Field index signal | – |
| 53 | VPWM | O | PWM signal for video PLL | – |

### (3) Audio interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 104 | AMCLK48 | I | Audio master clock input for sampling frequency 48 kHz | – |
| 103 | AMCLK44 | I | Audio master clock input for sampling frequency 44 kHz | – |
| 101 | AMCLKO | O | Audio master clock output | – |
| 96 | PCM1 | I/O | Audio PCM serial data<br>At 2ch : System 1 (data of audio block 1)<br>At 4ch : System 1<br>The above is default setting value. Input/output data of PCM 1 and PCM 2 is replaced by Channel swap setting of an AUDIO_FUNC register. | – |
| 97 | PCM2 | I/O | Audio PCM serial data<br>At 2ch : Mute<br>At 4ch : System 2 (data of audio block 2)<br>The above is default setting value. Input/output data of PCM 1 and PCM 2 is replaced by Channel swap setting of an AUDIO_FUNC register.<br>Note: Cannot use it in DV decode. | – |
| 98 | AEMP1 | O | PCM1 emphasis ON/OFF in PCM 1 output | H |
| 93 | ALRCK | I/O | Audio LR clock<br>L ch : High<br>R ch : Low | – |
| 94 | ABCK | I/O | Audio bit clock | – |
| 49, 48 | AFS [2 : 1] | O | Audio sampling frequency<br>AFS2 AFS1<br>44.1 kHz 0 1<br>48 kHz 0 0<br>32 kHz 1 0 | – |
| 102 | APWM | O | PWM signal for audio PLL | – |

### (4) SDRAM interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 77 | MCLK | O | CLK pin connection of SDRAM | – |
| 76 | MRAS | O | RAS pin connection of SDRAM | – |
| 75 | MCAS | O | CAS pin connection of SDRAM | – |
| 74 | MWE | O | WE pin connection of SDRAM | – |
| 92, 90-83, 81-79 | MA [ 11 : 0] | O | Address pin connection of SDRAM | – |
| 73-69, 66-64, 62-57, 55, 54 | MD [ 15 : 0] | I/O | Data pin connection of SDRAM<br>Note: Process of pull-up or pull down is necessary.<br>So connect it to SDRAM directly. | – |

### (5) Host interface pins

#### (a) Parallel interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 117 | CS | I | Chip select input of parallel interface | L |
| 119 | RWZ | I | Read and write control input of parallel interface<br>ISA type bus, SH-1 bus: Write strobe<br>68000 bus : Read/write selection signal | L |
| 120 | IOR | I | IO read control input of parallel interface<br>ISA type bus, SH-1 bus : Read strobe<br>68000 bus : Data strobe (DS) | L |
| 123 | IOCHRDY | O | Ready output of parallel interface | L |
| 116-107 | AD [ 10 : 1] | I | Address input of parallel interface | – |
| 143-141, 139-132, 130-128, 126, 125 | P_D [15 : 0] | I/O | Data input/output of parallel interface | – |

#### (b) Serial interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 149 | TXD | I/O | Serial transmission data output of unsynchronous serial interface (UART) | – |
| 150 | RXD | I/O | Serial transmission data input of unsynchronous serial interface (UART) | – |

#### (c) Others

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 124 | INT | O | Interrupt output to the outside | H |
| 106, 105 | PSSEL [1 : 0] | I | Parallel/serial interface selection<br>Input signal to select the outside interface which of parallel interface or serial interface.<br>PSSEL [1 : 0] Select<br>00 Serial interface (UART)<br>01 Parallel interface (ISA type bus)<br>10 Parallel interface (68000 bus)<br>11 Parallel interface (SH-1 bus) | – |

### (6) External ROM connection pins

#### (a) Flash ROM interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 196, 194-189, 186-178 | D [15 : 0] | I/O | External ROM data bus<br>Data bus in the external ROM access.<br>Process of pull-up or pull down is necessary. | – |
| 175, 174, 172, 171, 169-167, 165-156 | A [17 : 1] | O | External ROM address bus<br>Address bus in the external ROM access.<br>Can addressing the 256k byte space. | – |
| 176 | RDZ | O | ROM read<br>Strobe signal which shows a read cycle for external ROM.<br>It becomes the inactive in the idle state. | L |
| 177 | WRZ | O | ROM write<br>Strobe signal which shows a write cycle for external ROM. | L |

#### (b) EEPROM interface pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 145 | SO | I/O | Serial transmit data output of clock-synchronous system serial interface (CSI) | – |
| 146 | SI | I/O | Serial receive data input of clock-synchronous system serial interface (CSI) | – |
| 147 | SCK | I/O | Clock output of clock-synchronous system serial interface (CSI) | – |
| 151 | SCS | I/O | Chip select output of clock-synchronous system serial interface (CSI) | – |

### (7) Clock and reset pins

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 1 | RESETB | I | Reset<br>RESETB input is asynchronous input. When a signal of fixed low-level width is input without relation to an operation clock, take precedence of all operation, and reset the system. Note: RESETB is low-active. | L |
| 202 | HS_CLK | I | Host clock<br>Clock input pin which is supplied to CPU core and built-in peripheral I/O.<br>Please input 27 MHz clock. Perform 2 multiply with internal PLL by 27 MHz clock, 54 MHz clock is supplied to CPU core and internal peripheral I/O. | – |

**(8) Power supply and ground pins**

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 5, 31, 52, 63, 78, 95, 127, 140, 166, 187 | 3.3VDD | – | 3.3V power supply<br>3.3V positive power supply pins. Power supply for 3.3V interface I/O. | – |
| 14, 67, 118, 170 | 2.5VDD | – | 2.5V power supply<br>2.5V positive power supply pins. Power supply for internal each block. | – |
| 39, 91, 144, 195 | 2.5GND | – | Ground pins<br>Connect all GND pins to the common ground. | – |
| 9, 35, 56, 68, 82, 99, 131, 148, 173, 188 | 3.3GND | | | – |
| 199 | PLLAVDD | – | Analog power supply for multiply circuit<br>Analog positive power supply pin for PLL. Supply 2.5V. | – |
| 200 | PLLAGND | – | Analog ground for multiply circuit<br>Analog ground for PLL | – |
| 198 | PLLDVDD | – | Digital power supply for multiply circuit<br>Digital positive power supply pin for PLL. Supply 2.5V. | – |
| 201 | PLLDGND | – | Digital ground for multiply circuit<br>Digital ground for PLL | – |
| 121 | IC (H) | – | Internally connected pin<br>Connect to VDD directly. | – |
| 197, 203, 205-207 | IC (L) | – | Internally connected pin<br>Connect to ground directly. | – |
| 152, 154, 204 | IC (PL) | – | Internally connected pin<br>Connect to ground through a resistor. | – |
| 100, 122 | IC (O) | – | Internally connected pin<br>Set to open. | – |

**(9) Others**

| No. | Pin Name | I/O | Function | Active |
|---|---|---|---|---|
| 153 | DV_INT | I/O | Interrupt pin to the outside for the DV status read out. | H |
| 155 | BR_MON | I/O | Shows the bus reset occurred. There is some delay after real bus reset occurred because of set by the built-in firmware. | H |
| 208 | IFIROME | I | ROM operation selection input<br>Set to 1 normally. | – |

# 7.3 DIAGNOSIS METHOD OF THE HDD

## How to diagnose failure of the hard disc drive (HDD)

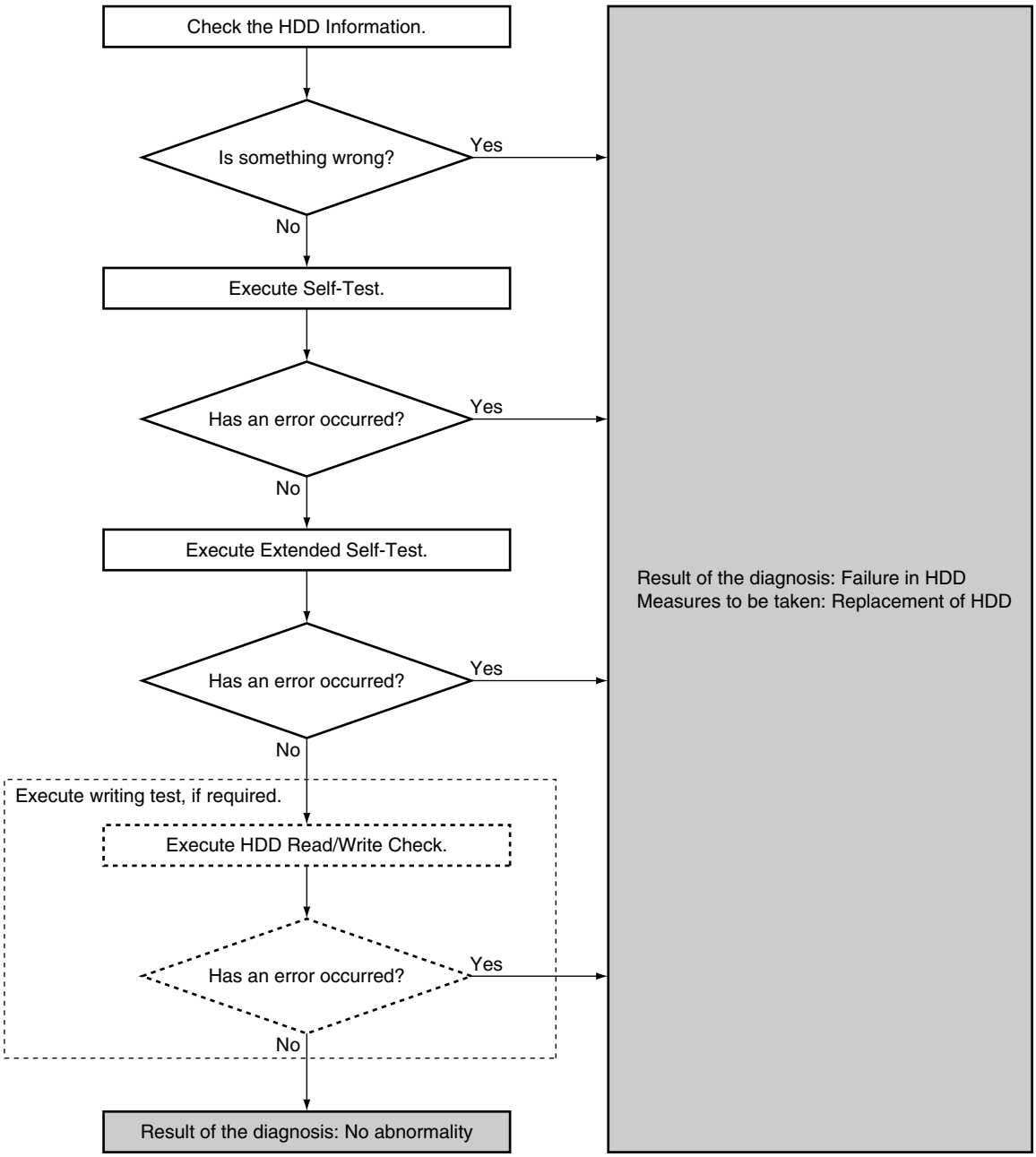
**Purpose:**
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

**Symptoms of failure in HDD:**
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

**Tool to be used:**
Remote control unit for servicing (GGF1381)

## 1. Flow of HDD diagnosis

### (1) Flowchart of HDD diagnosis



### (2) Overview of the diagnosis items

| | |
|---|---|
| **HDD Information** | This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.<br>Time required for testing: Approx. 30 sec. |
| **SELF TEST** | This is a simplified diagnosis for the HDD.<br>A serious failure in the HDD can be detected with this test.<br>Time required for testing: Approx. 90 sec. |
| **EXTENDED SELF TEST** | This is a reading test across all sectors of the HDD.<br>Data recorded on the HDD will not be erased, because no writing operation is performed.<br>Time required for testing: Approx. 40 min/80 GB |
| **HDD Read / Write Check** | This is a writing, reading, and comparing test across all sectors of the HDD.<br>**All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.**<br>Time required for testing: Approx. 7 hours/80 GB |

## 2. How to start or terminate the diagnostic program

### How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

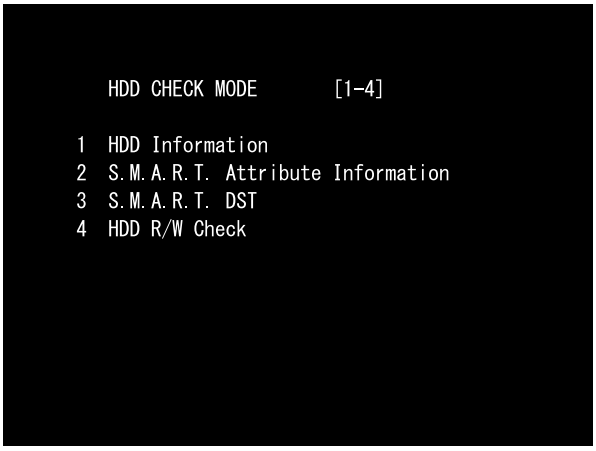
How to terminate: Press the "ESC" key.

Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording, and Input selection to L1-L3.

## 3. Diagnosis procedures

① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.




**Tests to be executed**
① HDD Information:
Check of the HDD information
② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

**Note:** "2. S.M.A.R.T. Attribute . . ." is not to be used.

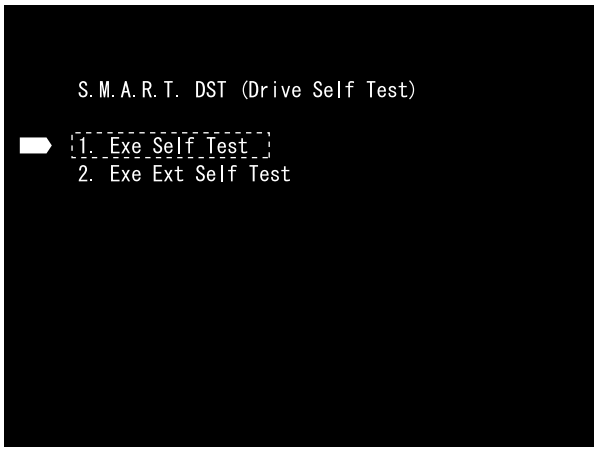
② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?

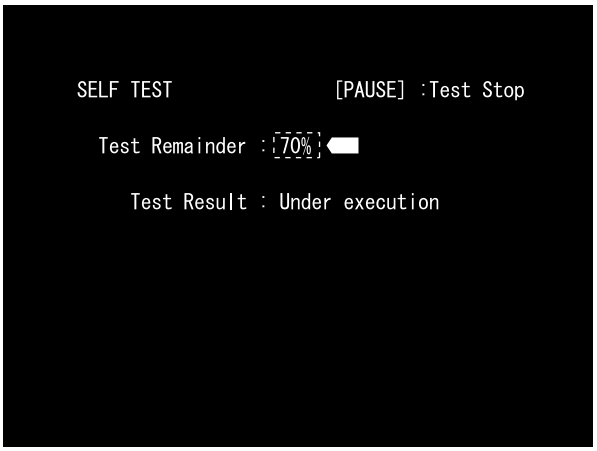
**Detailed description**
① Model:
For the correct model name, refer to the service manual of the unit.
② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.

Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.



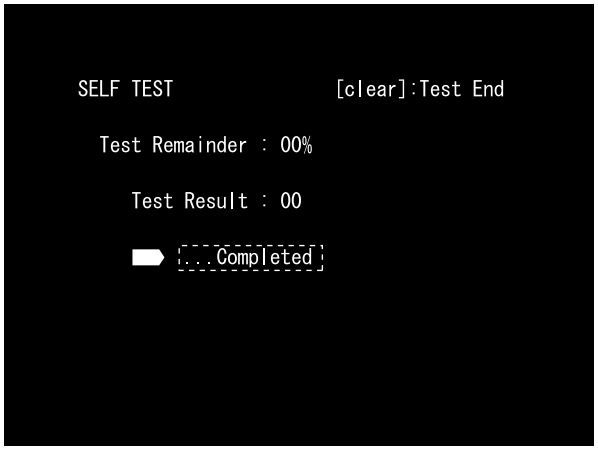

The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

**Diagnosis results**

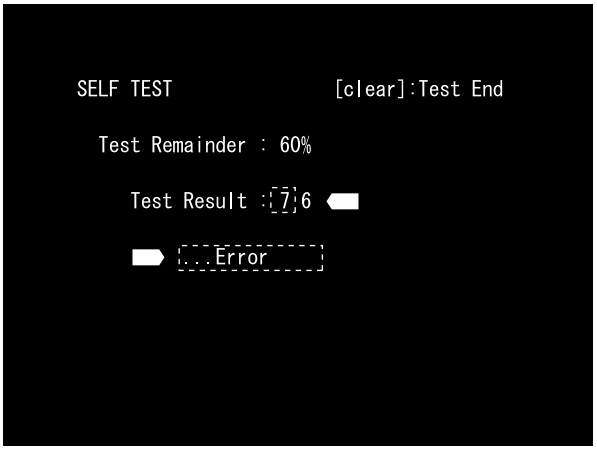
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

**Note:** If the result of the second test is the same, replacement of the HDD is required.

**Example: No error**

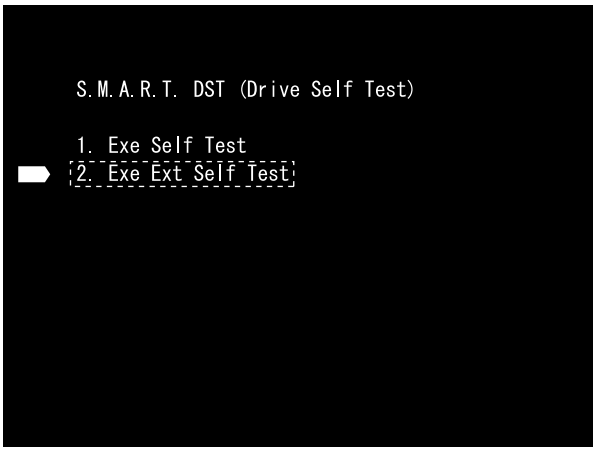


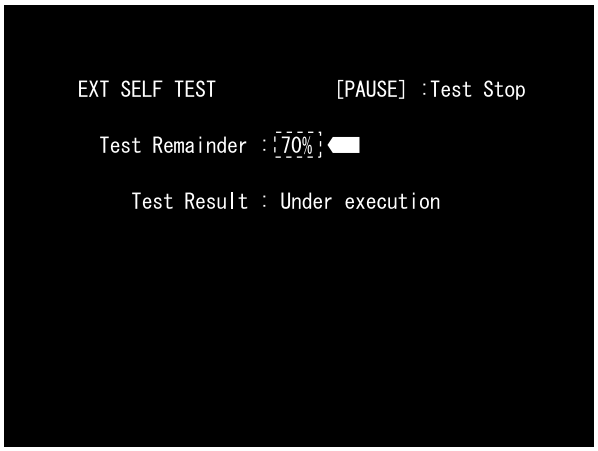

**Example: With an error**




To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



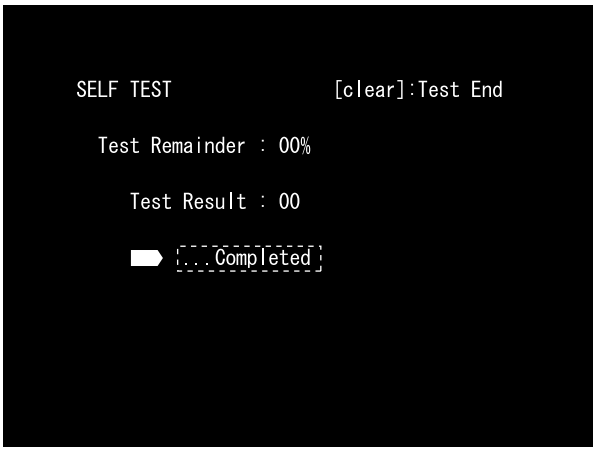




Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

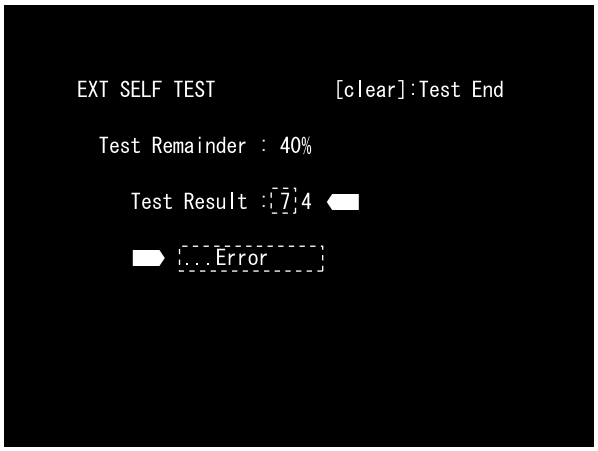
**Diagnosis results**
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

**Note:** If the result of the second test is the same, replacement of the HDD is required.

Example: No error




Example: With an error



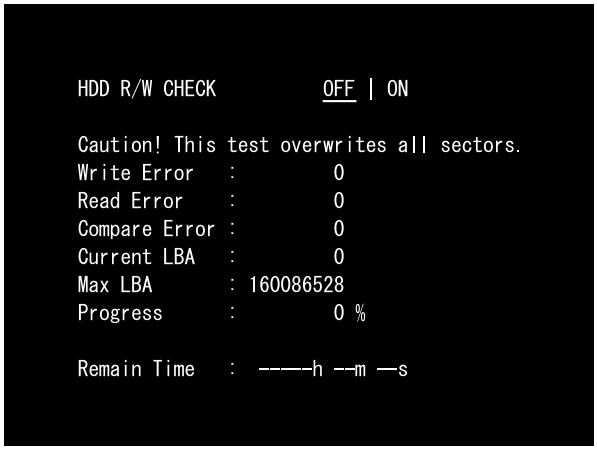

To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.

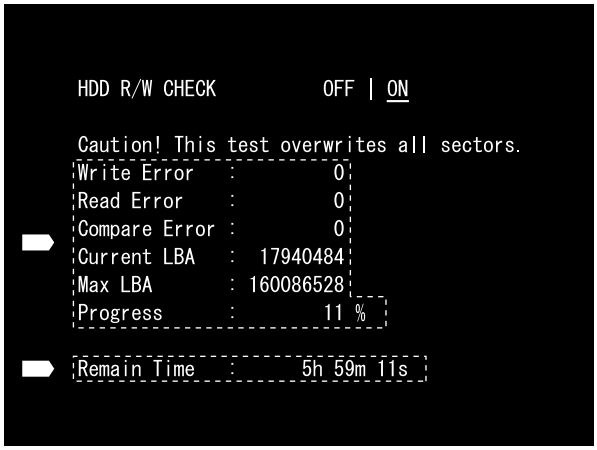
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.

Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.

To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 0
Max LBA : 160086528
Progress : 0 %
Remain Time : -----h --m --s

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 17940484
Max LBA : 160086528
Progress : 11 %
Remain Time : 5h 59m 11s

**Detailed description on each item on the screen**

- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 7 hours/80 GB

**Diagnosis results**

- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

# 7.4 CAUTIONS ON HANDLING THE HDD

## (1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

**Reference: Main specifications on damage to the HDD**

| | During operation | During nonoperation |
|---|---|---|
| Shock G (acceleration) | <approx. 20 G | <approx. 200 G |
| Temperature change | < 20°C/hour | |
| Moisture change | < 20%/hour | |

**Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection**

| Falling distance \ Landing surface | Granite surface | Concrete floor | Synthetic-resin-coated table | Antistatic sponge |
|---|---|---|---|---|
| 0.5 inch / 12.7 mm | 387 | 217 | 200 | 26 |
| 1.0 inch / 25.4 mm | 595 | 457 | 310 | 37 |
| 2.0 inch / 50.8 mm | 1133 | 600 | 680 | 70 |
| 4.0 inch / 101.6 mm | 1795 | 1040 | 1050 | 267 |

## (2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

### [Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

**● Examples of dangerous handling: while the power is on**

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

**● Examples of dangerous handling: while the power is off**

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit.
  If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurs during recording or playback, recorded data may be damaged. Be sure to check operations.

### [Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

### [Notes on packing for shipment]

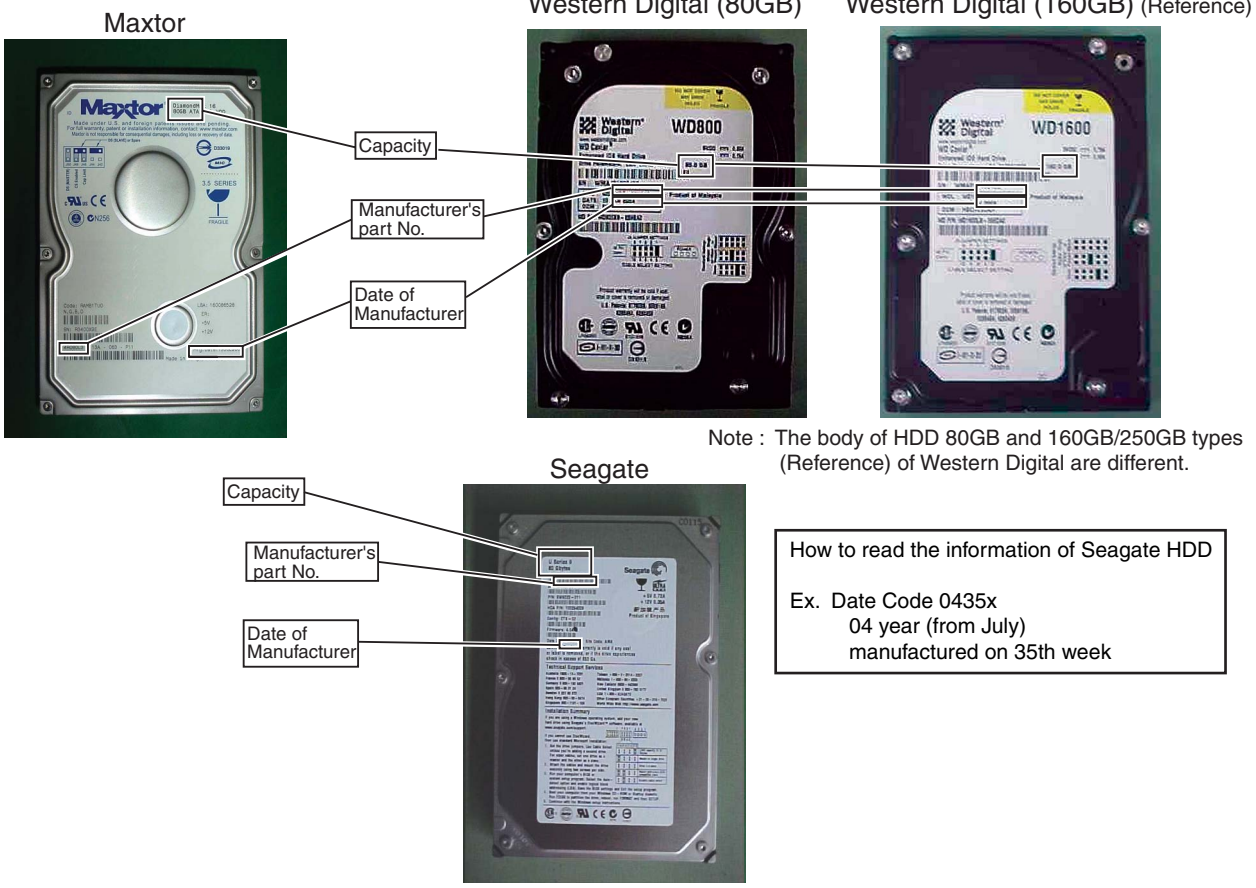
- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

## ■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

| Model Name | Capacity | Maxtor | | Western Digital | | Seagate | |
|---|---|---|---|---|---|---|---|
| | | Pioneer's Part No. (for service) | Manufacture's Part No. | Pioneer's Part No. (for service) | Manufacture's Part No. | Pioneer's Part No. (for service) | Manufacture's Part No. |
| XV-DVR9H | 80GB | VXF1010 | 4R080L0- | VXF1043 | WD800BB -xxHEAx | VXF1036 | ST38001□ACE- |

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.



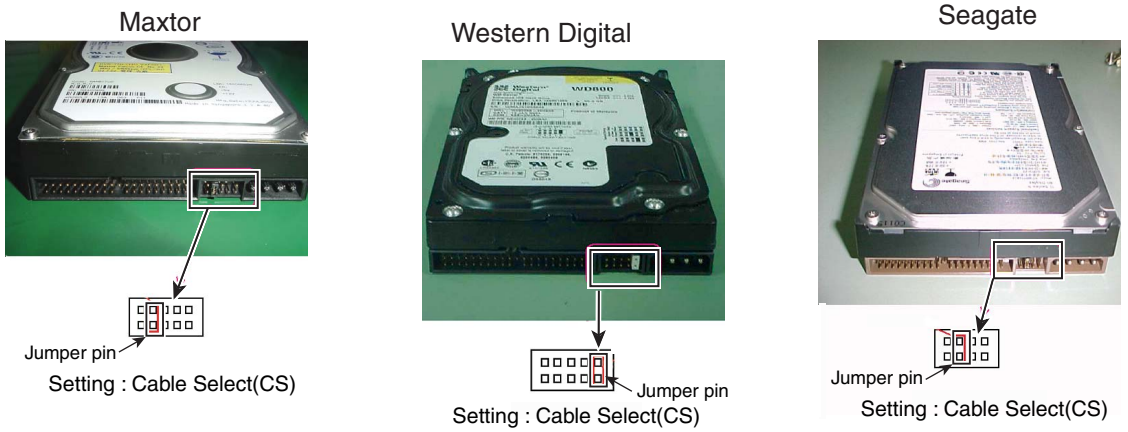

Note : The body of HDD 80GB and 160GB/250GB types (Reference) of Western Digital are different.

How to read the information of Seagate HDD

Ex. Date Code 0435x
04 year (from July)
manufactured on 35th week

Fig.1 Location of the data on capacity and part No. of the HDD

## ■ Confirmation of the jumper pin location of the HDD



# 7.5 DISC/CONTENT FORMAT

## Disc / content format playback compatibility

### General disc compatibility

This system is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD and DVD, may be in an unplayable format–see below for further compatibility information.

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

- Also compatible with KODAK Picture CD
- DVD is a trademark of DVD Format/Logo Licensing Corporation.
- is a trademark of Fuji Photo Film Co. Ltd.

This system also supports the IECís Super VCD standard. Compared to the Video CD standard, Super VCD offers superior picture quality, and allows two soundtracks to be recorded. Super VCD also supports the widescreen size.

Super Video CD (Super VCD)

### DVD-R/RW compatibility

This system will play and record DVD-R/RW discs.

Compatible media:

- DVD-RW Ver. 1.1, Ver. 1.1 / 2x and Ver. 1.2 / 4x
- DVD-R Ver. 2.0 and Ver. 2.0 / 4x / 8x

Recording formats:

- DVD-R: DVD-Video format (Video mode)
- DVD-RW: Video Recording (VR) format and DVD-Video format (Video mode)

Older models of DVD recorders and DVD writers may reject DVD-RW Ver. 1.2 / 4x discs. To share DVD-RW discs between this recorder and an older recorder/writer, we recommending Ver. 1.1 discs[1].

The following table shows older Pioneer DVD recorder compatibility with DVD-RW Ver. 1.2 / 4x discs.

| Model | Playable | Recordable |
|---|---|---|
| DVR-7000 | Yes[1,2,3] | No |
| DVR-3100/ DVR-5100H | Yes[1] | No |

[1] Discs should be finalized in this recorder before playing. Unfinalized VR mode and Video mode discs may not play.

[2] **Cannot read the CPRM information** will show in the display when you load a disc. However, this will not affect playback.

[3] Copy-once protected disc titles will not play.

### CD-R/RW compatibility

This system cannot record CD-R or CD-RW discs.

- Compatible formats: CD-Audio, Video CD/Super VCD, ISO 9660 CD-ROM* containing MP3, WMA or JPEG files
  * ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this system.
- Multi-session playback: Yes (except CD-Audio and Video CD/Super VCD)
- Unfinalized disc playback: CD-Audio only

### Compressed audio compatibility

- Compatible media: CD-ROM, CD-R, CD-RW
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 44.1 or 48kHz
- Bit-rates: Any (128Kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback: Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8 (files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)
- DRM (Digital Rights Management) file playback: No (see also DRM in the Glossary)
- File extensions: .mp3, .wma (these must be used for the system to recognize MP3 and WMA files ñ do not use for other file types)
- File structure: Up to 99 folders / 999 files (if these limits are exceeded, only files and folders up to these limits are playable)

### WMA (Windows Media Audio) compatibility

The Windows Media® logo printed on the box indicates that this system can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media® Player version 7, 7.1, Windows Media® Player for Windows® XP, or Windows Media Player 9 Series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries. ®

### JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  * File format used by digital still cameras
- Sampling ratio: 4:4:4, 4:4:2, 4:2:0
- Horizontal resolution: 160 – 5120 pixels
- Vertical resolution: 120 – 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, jpeg, jif, jfif (must be used for the system to recognize JPEG files – do not use for other file types)
- File structure: The system can load up to 99 folders / 999 files at one time (if there are more files/folders that this on the disc then more can be reloaded)

### PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this system.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

## 7.6 CLEANING

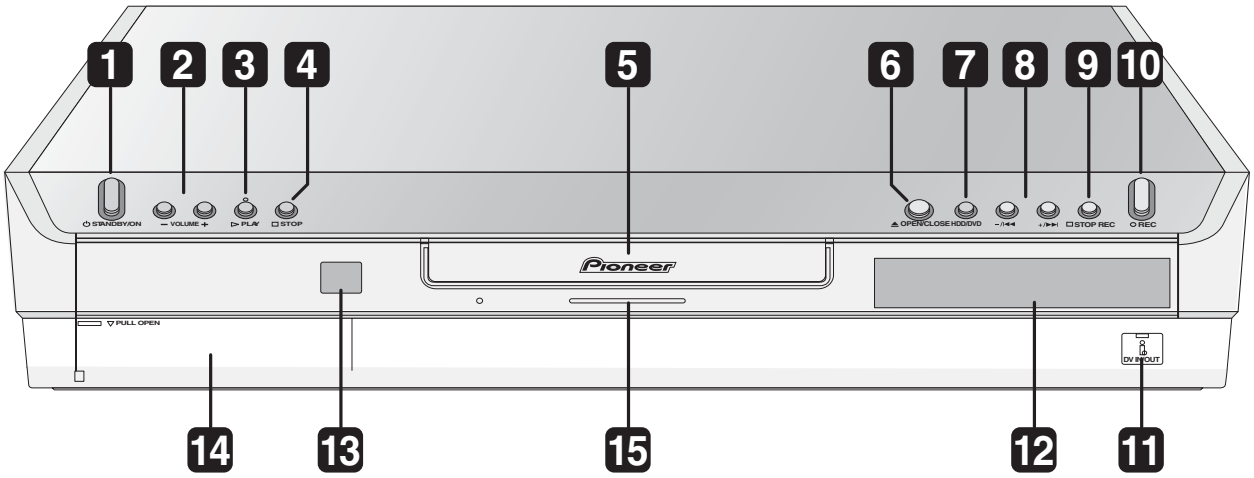
Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

| Position to be cleaned | Cleaning tools |
|---|---|
| Pickup lenses | Cleaning liquid : GEM1004<br>Cleaning paper : GED-008 |

| Position to be cleaned | Cleaning tools |
|---|---|
| Fans | Cleaning paper : GED-008 |

# 8. PANEL FACILITIES

## Front panel




**1 ⏻ STANDBY/ON**
Press to switch the system on/into standby.

**2 VOLUME buttons**
Use to adjust the volume.

**3 ► PLAY**
Press to start or restart playback.

**4 ■ STOP**
Press to stop playback.

**5 Disc tray**

**6 ⏏ OPEN/CLOSE**
Press to open/close the disc tray.

**7 HDD/DVD**
Press to switch between the hard disk drive (HDD) and DVD for recording and playback.

**8 -/I◄◄ +/►►I**
Use to change TV channels, skip chapters/tracks, etc.

**9 □ STOP REC**
Press to stop recording.

**10 ● REC**
Press to start recording.

**11 DV IN/OUT jack**
Digital input/output jack for use with a DV camcorder.

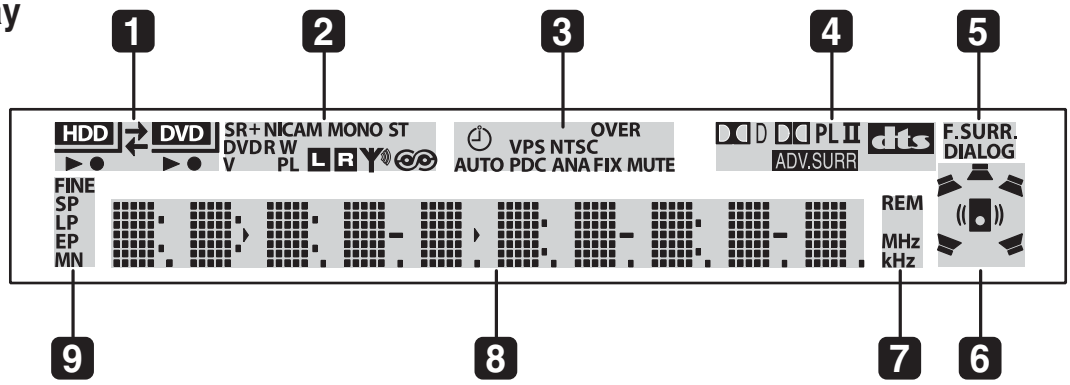
**12 Front panel display**

**13 IR remote sensor**

**14 Front panel inputs and headphones jack**
Pull the cover down where indicated to access the front panel input jacks. Especially convenient for connecting camcorders and other portable equipment.

**15 HDD indicator**
Lights blue when the HDD is selected.

# Display




**1 HDD and DVD playback / recording indicators**

HDD ⇄ DVD

Arrows indicate the copy direction between the HDD (HDD) and DVD (DVD).

**► PLAY / ● REC indicators**

Lights during playback / recording; blinks when playback / recording is paused.

**2 SR+**

Lights when the SR+ control mode is on.

**NICAM**

Lights when the broadcast audio is NICAM encoded.

**MONO**

Lights when a FM radio mono reception is selected.

**ST**

Lights when a FM radio broadcast is being received in auto stereo mode.

**DVD / R / W**

Indicates the type of recordable DVD loaded: DVD-R or DVD-RW.

**V**

Lights when an unfinalized Video mode disc is loaded.

**PL**

Lights when a VR mode disc is loaded and the system is in Play List mode.

L R

Indicates which channels of a bilingual broadcast are recorded.

Lights when a radio broadcast is being received.

Lights when RDS information is being displayed.

**3**

Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable).

**AUTO**

Lights when Auto Start Recording has been set, and during Auto Start Recording.

**OVER**

Lights when the **LINE1** or **LINE2** input level is too high.

**VPS / PDC**

Lights when receiving a VPS/PDC broadcast during a VPS/PDC-enabled timer recording.

**NTSC**

Lights when playing NTSC format video.

**ANA FIX**

Lights when the Analog out mode is set to **Fix**.

**MUTE**

Lights to indicate that the system is muted.

**4 D**

Lights during playback of a Dolby Digital source.

D PL II

Lights during Dolby Pro Logic II decoding.

dts

Lights during playback of a DTS source.

ADV.SURR

Lights when one of the Advanced or Front Surround listening modes is selected.

**5 F.SURR.**

Lights when playing in Front Surround mode.

**DIALOG**

Lights when dialog enhancement is on.

**6 Speaker indicators**

These show which speakers are being used to output the current source (they are not placement diagrams). The illustrations below show some example displays.

5.1 channel surround sound

Stereo (2.1 channel) sound

3.1 channel sound

**7 REM**

Lights when the character display is showing the remaining available recording time.

**kHz / MHz**

Indicates the unit of the frequency shown in the character display (**kHz** for AM, **MHz** for FM).

**8 Character display**

**9 Recording quality indicators**

**FINE**

Lights when the recording mode is set to FINE (best quality).

**SP**

Lights when the recording mode is set to SP (standard play).

**LP**

Lights when the recording mode is set to LP (long play).

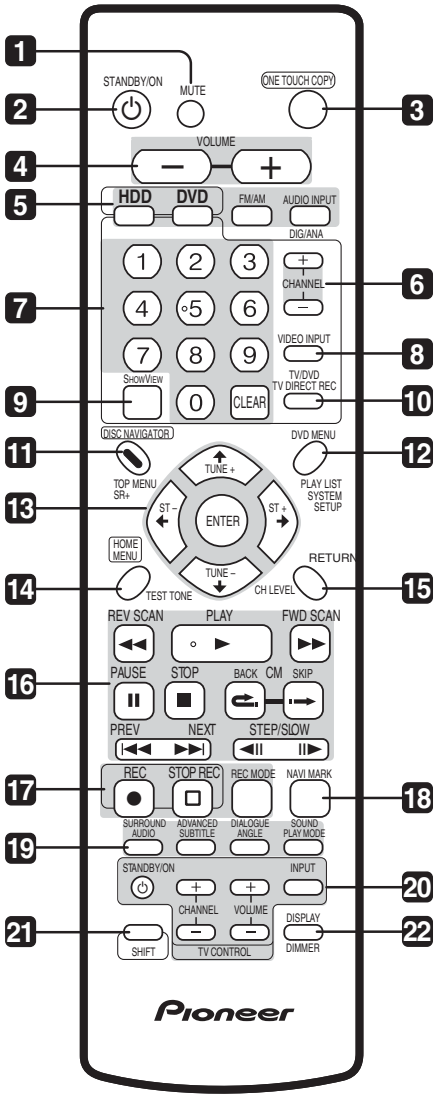
**EP**

Lights when the recording mode is set to EP (extended play).

**MN**

Lights when the recording mode is set to MN (manual recording level) mode.

# Remote control




**Important**

- Functions printed in green on the remote control are accessed by pressing the button indicated while holding down the **SHIFT** button.

**1 MUTE**

Press to mute all audio from the speakers and headphones. Press again to cancel and restore the sound.

**2 ⏻ STANDBY/ON**

Press to switch the system on or into standby.

**3 ONE TOUCH COPY**

Press to start One Touch Copy of the currently playing title to DVD or the HDD.

**4 VOLUME +/–**

Use to adjust the volume.

**5 Function select buttons**

**HDD**

Press to select the hard disk (HDD) for recording or playback.

**DVD**

Press to select the DVD for recording or playback.

**FM/AM**

Press to select the built-in radio tuner.

**AUDIO INPUT**

Press repeatedly to select one of the external audio inputs (**DIGITAL** or **ANALOG**).

**6 CHANNEL +/–**

Press to change the channel of the built-in TV tuner.

**7 Numeric buttons and CLEAR**

Use the number buttons for track/chapter/title selection; channel selection, and so on.

Use **CLEAR** to clear an entry and start again.

**8 VIDEO INPUT**

Press to change the input for recording and playback.

**9 SHOWVIEW**

Press, then use the number buttons to enter a ShowView programming number for timer recording.

**10 TV DIRECT REC**

Press to start recording whatever channel your TV is set to.

**+ SHIFT: TV/DVD**

Press to switch between 'TV mode', in which you get the picture and sound from the TV's tuner, and 'DVD mode', in which you get picture and sound from the system's tuner (or an external input).

**11 DISC NAVIGATOR / TOP MENU**

Press to display the Disc Navigator screen, or the top menu if a DVD-Video disc is loaded.

**+ SHIFT: SR+**

Press to setup SR+ and switch SR+ control on/off.

**12 PLAYLIST / DVD MENU**

Press to switch between Original and Play List content on VR mode discs, or display the disc menu if a DVD-Video disc is loaded.

**+ SHIFT: SYSTEM SETUP**

Use to access the menu system for surround sound setup, tuner settings and so on.

**13 ↑ /↓/← /→ (cursor buttons) and ENTER**

Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

**TUNE +/–**

Use to tune the radio.

**ST +/–**

Use to select station presets when listening to the radio.

**14 HOME MENU**

Press to display the Home Menu, from which you can navigate many the functions of the system.

**+ SHIFT: TEST TONE**

Use to output the test tone (for speaker setup).

**15 RETURN**
Press to go back one level in the on-screen menu or display.
**+ SHIFT: CH LEVEL**
Use to adjust the speaker level.

**16 Playback controls**
**◄◄ REV SCAN / FWD SCAN ►►**
Press to start reverse or forward scanning. Press again to change the speed.
**► PLAY**
Press to start playback.
**II PAUSE**
Press to pause playback or recording.
**■ STOP**
Press to stop playback.
**CM BACK (commercial back)**
Press repeatedly to skip progressively backward through the audio or video playing.
**CM SKIP (commercial skip)**
Press repeatedly to skip progressively forward through the audio or video playing.
**|◄◄ PREV / NEXT ►►|**
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.
**◄II STEP/SLOW II►**
During playback, press to start slow-motion playback; while paused, press to show the previous or next video frame.

**17 Recording controls**
**● REC**
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.
**□ STOP REC**
Press to stop recording.
**REC MODE**
Press repeatedly to change the recording mode (picture quality).

**18 NAVI MARK**
Press to select a thumbnail picture for the current title for use in the Disc Navigator screen.

**19 DVD playback functions and surround sound mode/sound enhancement buttons**

**AUDIO**
Changes the audio language or channel. (When no disc is playing or recording, press to change the tuner audio.)
**+ SHIFT: SURROUND**
Use to select a Surround mode.
**SUBTITLE**
Displays/changes the subtitles included in multilingual DVD-Video discs.
**+ SHIFT: ADVANCED**
Use to select an Advanced Surround mode.
**ANGLE**
Switches camera angles on discs with multi-angle scenes.
**+ SHIFT: DIALOGUE**
Use to select a Dialogue mode.
**PLAY MODE**
Press to display the Play Mode menu (for features such as search, repeat and program play).
**+ SHIFT: SOUND**
Press to access the sound menu, from which you can adjust bass and treble, etc.

**20 TV CONTROL**
After setting up, use these controls to control your TV.

**21 SHIFT**
Press to access functions on the remote printed in green.

**22 DISPLAY**
Displays/changes the on-screen information displays. Also changes RDS displays.
**+ SHIFT: DIMMER**
Press to switch between normal and dimmed front panel display.

A

B

C

D

E

F

## ■ Jigs list

| Name | Jig No. | Remarks |
|---|---|---|
| Service Remote Control Unit | GGF1381 | adjustment, diagnosis |
| DVD Test Disc (DVD-Video) | GGV1025 | Check of DVD-Video |
| DVD Recorder Data Disc | GGV1179 | diagnosis (ID data setting) |
| Extension Cable | GGD1315 | diagnosis (Extension for CONTROL- JACK) |